DOCUMENT RESUME

ED 222 375 SE 039 469

TITLE	Young and Senior Science and Engineering Faculty, 1980. Characteristics, Appointments and Departures, and Research Activities. Special Report.
INSTITUTION	National Science Foundation, Washington, D.C.
REPORT NO	NSF-81-319
PUB DATE	81
NOTE	193p.
AVAILABLE FROM	National Science Foundation, 1800 G Street, N.W., Washington DC 20550 (no charge for single copies).
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Academic Rank (Professional); *College Science; Doctoral Degrees; Engineering; Engineering Education; *Engineers; Faculty Mobility; *Federal Aid; Females; *Full Time Faculty; Higher Education; Mathematics; Psychology; Researchers; *Research Proposals; Science Education; *Scientists; Social Sciences
IDENTIFIERS	National Science Foundation

ABSTRACT

In recognition of the important role of recent science/engineering (S/E) doctorates, the National Science Foundation has monitored doctoral representation in Ph.D.-granting departments through a series of surveys begun in 1968 and continued in 1974 and 1980. This report presents the findings of the 1980 survey and contrasts them with those from the two earlier studies. For the 1980 mail survey representing 39,760 full-time faculty members in 19 S/E fields, recent doctorates were those who received their degrees in the spring of 1973 or later. Those receiving their degrees earlier were classified as senior doctorates. Results are reported in three sections, focusing on: (1) characteristics of S/E faculty, including representation of recent doctorates, faculty tenure status and age distribution, distribution of faculty by sex and race/ethnic group, and non-faculty research doctorates; (2) faculty appointments and departures; and (3) research activities of recent doctorates, including number of proposals submitted/funded, opinions of department heads on distribution of research support between senior/junior faculty, federally supported principal investigators, and research in federal and industrial laboratories. Survey instruments, technical notes, and detailed statistical tables are included in appendices. Results, among others, indicate that the fraction of faculty comprised of recent doctorates has dropped sharply between 1968 and 1980. (Author/JN)

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foreword

The continued vitality of academic research is affected by the contributions of younger scientists and engineers. These recent doctorates often pioneer new avenues of research and suggest innovative methods of analyzing old problems. In recognition of the special role of these younger faculty, the National Science Foundation (NSF) began in 1968 to monitor the proportions of faculty in Ph.D.-granting departments who have held their doctorates seven years or less. That 1968 study also compared the tenure status and research activities of recent and senior doctorates. The survey which followed in 1974 included these topics as well as new information on faculty tenure status.

The 1980 survey, the results of which are reported here, has expanded the scope of the earlier studies to include related information. New questions on faculty appointments and departures provide previously unavailable information that can be used in forecasting future academic openings for recent doctorates. These new questions on faculty turnover help satisfy a recommendation made by a group established in 1979 by the National Academy of Sciences to investigate whether remedial action was needed to increase the representation of recent doctorates. In addition, the 1980 survey for the first time requested data on the age, sex, and race/ethnic composition of faculty as well as the numbers, characteristics, and research activities of nonfaculty research doctorates, a group about whom relatively little information has been available.

NSF deeply appreciates the high degree of response from department heads and hopes that the information in this report will assist those who are concerned about maintaining an adequate flow of younger researchers into our universities.

Charles E. Falk
Director,
Division of Science Resources Studies
Directorate for Scientific, Technological,
and International Affairs

June 1981

acknowledgments

This report was prepared in the Supply and Education Analysis Group by Larry W. Lacy under the direction of Charles H. Dickens, Senior Study Director. Lance Hodes of Westat, Inc., supervised the tabulation of survey results. Alan Fechter, Head of the Scientific and Technical Personnel Studies Section and Charles E. Falk, Director, Division of Science Resources Studies, provided general guidance and review.

5

contents

Page

Introduction vi

Highlights viii

Section:

I. Characteristics of Science and Engineering (S/E) Faculty, Spring 1980 1
  - Representation of Recent Doctorates 1
  - Faculty Tenure Status and Age Distribution 3
  - Distribution of Faculty by Sex and Race/Ethnic Group 4
  - Nonfaculty Research Doctorates 5

II. Faculty Appointments and Departures 7

III. Research Activities of Recent Doctorates 9
  - Number of Proposals Submitted and Funded 9
  - Opinions of Department Heads 10
  - Federally Supported Principal Investigators 11
  - Research in Federal and Industrial Laboratories 11

Appendixes:
  - A. Technical Notes 14
  - B. Detailed Statistical Tables 15
  - C. Reproduction of Survey Instruments 117

introduction

Recent doctoral faculty, defined as those having held their doctorates for seven years or less, have long been a group of particular interest to NSF. Many observers believe that this group plays a key role in advances in academic research,[1] although it has not been demonstrated that younger researchers are on average more productive than their senior colleagues.[2] Even though the issue of relative productivity is still an active research topic, there seems little dispute that younger faculty make important contributions, such as exploring new lines of inquiry not already claimed by those with longer experience. Many senior faculty are engaged in areas of research that they began many years before. Without an adequate inflow of younger people just starting their careers, many promising research topics may be neglected.

In recognition of the important role of recent doctorates, NSF has monitored doctoral representation in Ph.D.-granting departments through a series of surveys begun in 1968 and continued in 1974 and 1980.[3] This report presents the findings of the 1980 survey and contrasts them with those from the two earlier studies. For the 1980 survey, recent doctorates were those who received their degree in the spring of 1973 or later. Those receiving their degrees earlier were classified as senior doctorates.

In addition to collecting followup data to the previous studies, several changes and additions were made in this survey to expand substantially its usefulness in policy formulation and to provide baseline data for future work in this area. These changes include the following: (1) increasing the number of disciplines; (2) collecting information on proposal submission activity, funding success, and faculty demographic characteristics; and (3) at the suggestion of a group established by the National Academy of Sciences, collecting information on faculty appointments and departures. The instrument also was enlarged to collect data concerning the employment and research activities of nonfaculty research doctorates in the surveyed departments.

This survey was conducted by mail in the spring of 1980. The universe consisted of all the 156 institutions that had awarded at least one S/E doctorate degree in 1975/76 and received at least $1.4 million in Federal funds for research and development in 1977.[4] Within institutions, only those departments offering doctorates were included. These doctorate-level departments totaled 1,870, of which 1,640 were in graduate schools and 230 were part of medical colleges. A total of 1,467 departments replied to the survey. Of the 156 selected institutions, 152 returned questionnaires from at least one department. The results, which were weighted to correct for the nonresponding departments, represented a total of 39,760 full-time faculty members in 19 S/E fields. These fields were selected so as to account for the largest number of faculty across the six broad fields for which aggregate survey results are presented.

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[1] See National Academy of Sciences, *Research Excellence Through the Year 2000* (Washington, D.C., 1979).

[2] S. Cole, "Age and Scientific Performance," *American Journal of Sociology*, Vol. 84 (1979). Also see B. Reskin, "Age and Scientific Productivity: A Critical Review," *The Demand for New Faculty in Science and Engineering*, ed., M. McPherson (Washington, D.C., National Academy of Sciences, 1980).

[3] See National Science Foundation, *Support and Research Participation of Young and Senior Academic Staff, 1968* (NSF 68-31) and *Young and Senior Science and Engineering Faculty, 1974* (NSF 75-302) (Washington, D.C.: Supt. of Documents, U.S. Government Printing Office).

[4] In 1974, institutions that awarded S/E doctorates and had received $1.0 million in Federal R&D obligations in 1972 were selected. The $1.4 million criterion for 1977 obligations represents approximately the same amount in 1972 value dollars.

Where appropriate, responses to survey questions were analyzed to determine whether they varied with certain institutional and departmental characteristics. The basic distinction usually drawn between institutions of higher education was whether they are privately or publicly controlled. Whether the institution ranked in the top 50 in terms of total 1977 Federal R&D obligations distinguished faculty in the most research-intensive environments from all others, whereas the total number of graduate students was a measure of departmental size. Finally, rankings assigned by the 1970 Roose-Anderson survey were used as indices of departmental quality.

highlights

- The proportion of recent doctorates—those holding their degrees for seven years or less—on the full-time faculty of science and engineering (S/E) departments in Ph.D.-granting institutions was 21 percent in 1980, down from 28 percent in 1974 and 39 percent in 1968. (The concensus of all surveyed department heads is that recent doctorates should represent 30 percent of all doctoral faculty.)
- Between 1974 and 1980, the fraction of recent doctorates fell in 14 of 15 S/E fields. The largest drop was in mathematics where the share fell from 35 percent to 22 percent. Chemical engineering, which had only a small gain, was the only field that showed an increase.
- The fraction of full-time faculty with tenure rose in 12 of the 15 fields surveyed in both 1974 and 1980 with an average gain of about 5 percentage points. Only chemical engineering had a significantly lower tenure proportion in 1980 than in 1974. The greatest 1980 concentration of tenured faculty was in physics, 83 percent, and the lowest was in computer science, 59 percent.
- Both recent and senior doctorates averaged almost one research proposal per person in academic year 1978-79. Recent doctorates received approval on about two-thirds of the proposals on which funding decisions had been made by the time of the survey. About three-fourths of the proposals from senior doctorates were funded.
- About 1 out of 20 recent doctorates who were active in research had worked in a Federal laboratory during the year prior to the survey. About 1 in 50 had participated in research in industrial laboratories.
- S/E departments included in the survey employed about 1 nonfaculty research doctorate for each 10 full-time S/E faculty. Almost three-fourths of nonfaculty research doctorates had held their degrees for 7 years or less. When combined with faculty, therefore, about one in four of scientists and engineers employed in the surveyed departments had held their degrees for not more than 7 years. About four-fifths of the nonfaculty group worked in departments in the biological and physical sciences.
- About 5 percent of 1978/79 full-time faculty changed employers or left the active labor force before the beginning of the next academic year. Voluntary resignations to accept other academic positions accounted for one-third of the departures.
- Overall, switches to nonacademic employment accounted for one-fifth of departures, the same share accounted for by retirements. Involuntary separation resulting from failure to receive tenure followed in importance as a reason for leaving.
- In 1979/80 approximately 7 percent of full-time faculty had been newly appointed to their departments. As a group, departments filled the majority of their 1979/80 faculty needs by recruiting from the ranks of graduate students and postdoctorates. Experienced faculty from other institutions provided one-third of appointees.
- One-sixth of new faculty in the four engineering fields came from industry. In the other broad fields, industry was only a relatively minor source of new appointees.
- Women had a larger level of representation among recent doctorates, 14 percent, than among senior doctorates, 5 percent. About one-fifth of nonfaculty research doctorates were women.
- About 1 in 12 faculty members belonged to race/ethnic minority groups, with a higher level of representation among recent doctorates than among senior. About two-thirds of minority faculty were Asian or Pacific Islanders. The remaining minority faculty were split about equally between blacks and Hispanics. About 22 percent of nonfaculty research doctorates were members of race/ethnic minority groups.

section I

characteristics of S/E faculty, spring 1980

The 1980 survey had three chief purposes with respect to faculty: determining whether recent doctorates have continued to decline as a fraction of S/E faculty; collecting information which can be used in forecasting changes in the representation of younger faculty (defined as those holding their doctorates for seven years or less); and comparing this group to all other S/E faculty in regard to research activities. This section deals with the first concern by describing how the fraction of faculty comprised of recent doctorates dropped sharply between 1968 and 1980. This section also discusses how the relatively small number of faculty near retirement age and the increasing percentage who have tenure suggest that new Ph.D.'s may have fairly limited employment opportunities for several years in most fields of science unless departments expand the number of faculty slots. Section II continues the focus on the possible future representation of younger doctorates by analyzing faculty turnover patterns and section III examines comparative research activities.

This section also deals with the survey's two allied purposes. The first was to learn more about nonfaculty research doctorates, an important academic group for whom relatively little information is available. The second was to characterize the 1980 sex and race/ethnic composition of S/E faculty. The earlier 1968 and 1974 surveys did not collect such information.

representation of recent doctorates

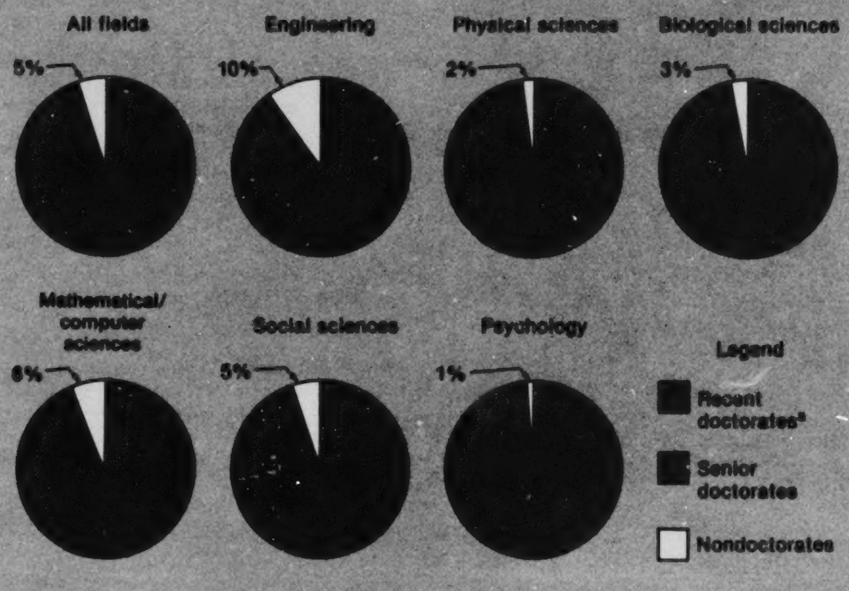
Of the full-time 1980 faculty in the surveyed departments, 21 percent had held their doctorates for seven years or less. (This criterion was first used in the 1968 survey to reflect a then widely accepted norm for the length of pretenure probationary periods.) Senior doctorates made up 74 percent of the 1980 faculty. Another 5 percent did not hold doctorates.

The distribution of recent, senior, and nondoctorate faculty varied broadly among the six broad S/E fields. The physical sciences had the lowest proportion of recent doctorates (14 percent), whereas the social sciences had the highest (29 percent) (chart 1). The distribution of faculty by doctorate status for 19 S/E fields is shown in table 1. In physics only 11 percent were recent doctorates, whereas in computer science, a relatively new discipline, 37 percent had held their doctorates seven years or less.

Public institutions as a group had a slightly smaller proportion of recent-doctorate faculty (20 percent) than did private institutions (23 percent). Departments in the 50 universities that received the most Federal R&D funding also had a slightly lower proportion of recent doctorates (20 percent) than did all other institutions (22 percent).

NSF has conducted or supported a series of surveys that has traced a steady decline in the proportion of S/E faculty

Chart 1. Full-time faculty in doctorate-granting departments, by doctoral status and broad fields: Spring 1980



[a]Faculty who have held doctorates 7 years or less.
SOURCE: National Science Foundation

Table 1. Full-time faculty in doctorate-granting departments, by doctoral status and field: Spring 1980

Field	All faculty (No.)	Recent doctor-ates[1] (%)	Senior doctor-ates (%)	Non-doctor-ates (%)
All selected fields	39,760	21	74	5
Engineering	7,236	20	70	10
Chemical	1,039	23	73	4
Civil	1,886	22	64	14
Electrical	2,313	17	75	8
Mechanical	1,998	19	67	14
Physical sciences	8,354	14	84	2
Chemistry	3,380	16	82	2
Geology	1,394	19	79	2
Physics	3,580	11	88	1
Biological sciences	8,768	19	78	3
Biology	2,400	20	78	2
Botany	832	20	74	6
Zoology	1,005	23	70	7
Biochemistry	1,676	14	85	1
Microbiology	1,414	18	79	3
Physiology	1,441	23	76	2
Mathematical/ computer sciences	5,325	24	70	6
Mathematics	4,485	22	73	6
Computer sciences	840	37	55	8
Social sciences	6,704	29	66	5
Economics	2,517	30	63	7
Political sciences	2,204	26	72	3
Sociology	1,983	31	65	4
Psychology	3,373	27	72	1

[1] Faculty who have held doctorates seven years or less

NOTE: Percents may not total 100 because of rounding.

SOURCE: National Science Foundation

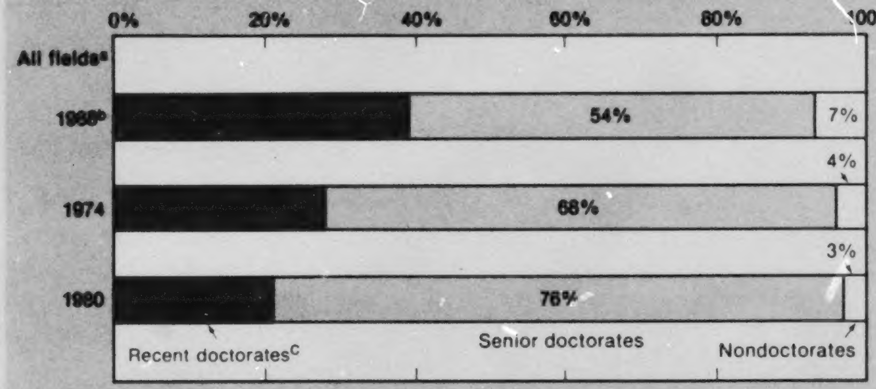
who have held their doctorates seven years or less. Recent doctorates declined as a share of full-time S/E faculty from 39 percent in 1968 to 28 percent in 1974 and to 21 percent in 1980 (chart 2). The 1968 proportion reflected the massive inflow of new faculty in response to the rapid increase in college enrollments during the sixties. Such a proportion could not have been maintained, given normal faculty attrition, without continuing rapid growth in the number of faculty. All 12 fields surveyed in both 1968 and 1980 recorded a drop in the proportion of younger faculty between the two years. Physics had the largest decline in recent doctorates—from 38 percent in 1968 to 11 percent in 1980. In mathematics the drop was almost as great—from 47 percent to 22 percent. Of the 15 fields surveyed in both 1974 and 1980, 14 declined in the percentage of recent doctorates with only chemical engineering registering an increase.

The decline in the percentage representation of younger faculty left this group well below the levels believed desirable by department heads (table 2). Although desired proportions of recent doctorates ranged between 22 percent and 44 percent in the various fields, most values clustered around the overall median of 30 percent. This contrasts with the actual 1980 representation of 22 percent.[5] The smallest gap between desired and actual levels among the broad fields was in the social sciences (33 percent versus 30 percent). In no broad field was the ideal percentage reached. The overall "optimum" of 30 percent seems to be relatively stable both over time and across surveys. The same average for the desired level of recent doctorate representation was obtained in a 1975 survey supported by NSF.[6]

A slight adjustment in this comparison is required, since department heads were asked about the desired proportion of *doctorates* who should be recent, rather than the percentage of all faculty who should be recent doctorates.

Frank J. Atelsek and Irene L. Gomberg, *Young Doctorate Faculty in Selected Science and Engineering Departments, 1975 to 1980* (Washington, D.C., American Council on Education, 1976).

Chart 2. Trends in doctorate composition of full-time faculty in doctorate-level departments



[a]Only the 12 fields are included that are common to the surveys for 1968, 1974, and 1980.
[b]Percentages for 1968 are based on unweighted data.
[c]Faculty who have held doctorates 7 years or less.

SOURCE: National Science Foundation

Table 2. Doctorate-level department heads' opinions of the desired, compared with the actual, percentage of recent doctorates in full-time doctorate faculties: Spring 1980

Field	Recent doctorates[1] as percent of total doctorate faculty (a)	Percent of recent doctorates desired by department heads[2] (b)	Difference between actual and desired percent-ages (c)=(a)-(b)
All selected fields	22	30	-8
Engineering	22	30	-8
Chemical	24	29	-5
Civil	25	29	-4
Electrical	19	29	-10
Mechanical	22	30	-8
Physical sciences	15	25	-10
Chemistry	16	27	-11
Geology	20	28	-8
Physics	11	22	-11
Biological sciences	20	27	-7
Biology	20	27	-7
Botany	21	25	-4
Zoology	25	32	-7
Biochemistry	14	25	-11
Microbiology	18	28	-10
Physiology	23	26	-3
Mathematical/computer sciences	26	30	-4
Mathematics	23	26	-3
Computer sciences	40	44	-4
Social sciences	30	33	-3
Economics	32	32	0
Political sciences	26	30	-4
Sociology	32	33	-1
Psychology	27	34	-7

[1] Faculty who have held doctorates seven years or less.
[2] Median value of responses.

SOURCE: National Science Foundation

faculty tenure status and age distribution

Designed as a means to protect academic freedom, the granting of tenure has important implications for the number of faculty positions that become available for younger scientists and engineers. As the proportion of faculty with tenure rises, openings necessarily decrease unless there is a compensating increase in attrition or growth in the total number of positions. Many science departments which are unable to expand the number of faculty slots find that they can hire few or no new faculty for the next several years because all of their members have gained tenure.[8] As noted in the next section, however, many engineering faculty slots are vacant so there should be extensive opportunities for those seeking positions in engineering colleges.

Both the 1974 and 1980 surveys requested information on the number of faculty with tenure (chart 3). The overall increase in tenured faculty of from 70 percent in 1974 to 74 percent six years later is consistent with the reported drop in recent doctorates. Only 14 percent of the latter have tenure as compared to 92 percent of senior doctorates. In regard to changes in individual fields, 12 of the 15 surveyed in both years registered a rise in the proportion of faculty with tenure. Only chemical engineering had a significantly lower tenure proportion in 1980 than in 1974 (73 percent vs. 81 percent). Of the six broad fields, the physical sciences had the highest 1980 level of tenured faculty—81 percent. Other broad fields ranged from 70 percent to 75 percent. The proportion of faculty with tenure also varied by source of institutional support with private institutions having a lower level than public (69 percent versus 76 percent).

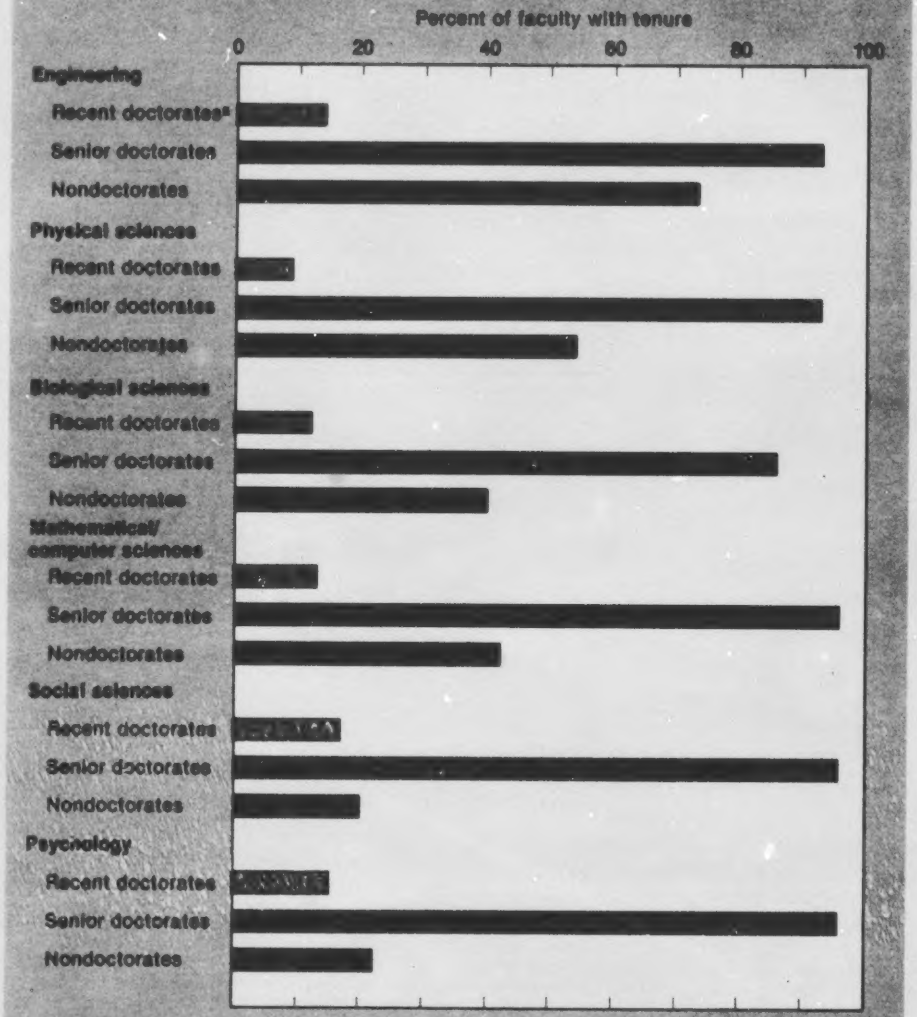
Also important in assessing tenure statistics are data on the proportion of nontenured faculty who are on tenure track. Those in this category are eligible for tenure consideration in the future and hence have the potential of holding their positions until retirement or voluntary transfer to other employment. For all fields combined, 75 percent of the nontenured faculty were in tenure track positions. Among recent doctorates, 84 percent of those who were nontenured were on tenure track, compared to 66 percent of the nontenured senior doctorates. Only 26 percent of the nondoctorates without tenure were on tenure track.

See Frank J. Atelsek and Irene L. Gomberg, *Tenure Practices at Four-Year Colleges and Universities* (Washington, D.C.: American Council on Education, 1980).

For a general discussion of the factors that have lead to decreased representation of younger faculty see National Academy of Sciences, *Research Excellence Through the Year 2000*, op. cit.

The number of faculty near retirement age is one useful indicator of how many positions with tenured incumbents may become open for recent doctorates. After the 1978/79 academic year about as many faculty left academia through retirement as voluntarily resigned to transfer to nonacademic jobs. By comparison, deaths and illnesses accounted for only one-fifth as many departures as did retirements. (Section II examines the reasons for faculty separations.) In 1980 only 2 percent of faculty in the surveyed departments were 65 years of age or older and hence could be expected to retire within the next few years (table 3.) Another 6 percent were between 60 and 64 but only a few of these would face mandatory retirement before 1986.[9] The percentages in these age groups varied little among the various S/E fields. Differences were greater at the younger end of the age distributions. The mathematical and social sciences and psychology all had about 45 percent of their faculty under 40 years of age. Less than one-third of the faculty in engineering and the physical sciences were that young. About two-fifths of the faculty in the surveyed departments in the biological sciences were under 40 years of age.

Chart 3. Full-time faculty having tenure in doctorate-granting departments, by doctoral status and broad fields: Spring 1980



[a]Faculty who have held doctorates 7 years or less.
SOURCE: National Science Foundation

distribution of faculty by sex and race/ethnic group

The results of the 1980 survey suggest that women are increasing their representation on full-time S/E faculty. Recent doctorates have a bigger percentage of their ranks who are women than do senior doctorates—14 percent versus 5 percent for an overall 7 percent (chart 4.) Engineering registered the lowest percentage of female faculty, 1 percent, and psychology the highest, 17 percent. The latter field, in particular, seems to have experienced a dramatic increase in the proportion of women among its younger members. One-third of the psychology faculty in the surveyed departments who were recent doctorates were female. This approximates the distribution by sex of psychology doctorates awarded since 1972. Only 10 percent of the senior psychology faculty were women.

The number of race/ethnic minority group members was slightly greater than the count of women in the surveyed departments. Overall, 8 percent of faculty belonged to minorities. Their representation was higher among recent doctorates, where they accounted for 11 percent of the total, than among senior doctorates, where they were 7 percent of all faculty. Two out of three minority faculty were Asian or Pacific Islanders who comprised the largest minority in all fields except psychology and sociology. In these two cases blacks were the most represented minority. Overall, only about 1 percent of S/E faculty were black. Only about 1 out of 90 S/E faculty were Hispanic. Departments in the social and biological sciences employed about one-half the Hispanic S/E faculty.

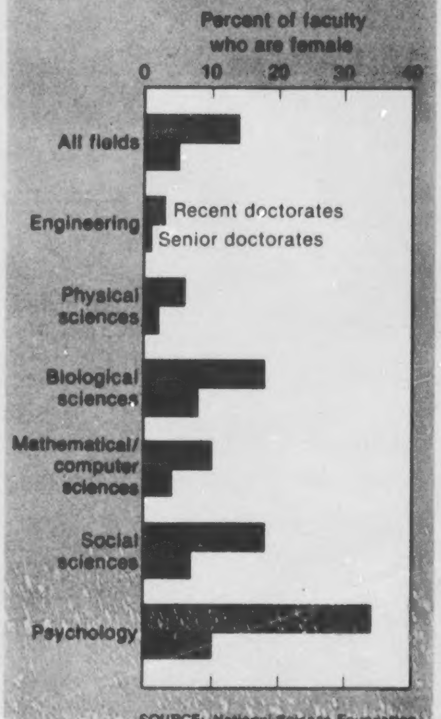
Those who were 64 years of age in 1980 would be 65 one year later and would not be covered by recent legislation raising the current minimum retirement age of 65 to 70 effective in 1982.

Table 3. Full-time faculty in doctorate-granting departments, by age and field: Spring 1980

Field	All faculty (number)	Age (percent)							
		Under 30	30-39	40-49	50-54	55-59	60-64	65-69	Over 70
All selected fields	39,760	6	31	31	12	10	6	2	0
Engineering	7,236	6	26	34	13	12	6	2	0
Chemical	1,039	10	25	31	14	10	8	1	0
Civil	1,886	4	29	34	12	12	6	2	0
Electrical	2,313	6	26	35	14	11	6	2	0
Mechanical	1,998	6	23	35	12	14	6	2	0
Physical sciences	8,354	3	27	36	14	11	7	2	0
Chemistry	3,380	4	30	34	12	10	7	3	0
Geology	1,394	5	28	34	14	9	7	2	0
Physics	3,580	2	25	38	15	12	6	2	0
Biological sciences	8,768	3	36	29	13	10	7	2	0
Biology	2,400	3	35	30	12	11	7	2	0
Botany	832	4	30	29	13	10	11	3	0
Zoology	1,005	6	35	25	12	11	9	3	0
Biochemistry	1,676	2	31	32	15	10	7	3	0
Microbiology	1,414	2	36	29	15	10	7	2	0
Physiology	1,441	2	42	27	13	9	6	2	0
Mathematical/computer sciences	5,325	9	37	30	11	8	4	2	0
Mathematics	4,485	8	36	30	11	8	4	2	0
Computer sciences	840	14	42	25	10	7	1	1	0
Social sciences	6,704	7	37	26	10	10	6	2	0
Economics	2,517	13	35	25	10	9	5	2	0
Political sciences	2,204	5	36	29	9	11	7	3	0
Sociology	1,983	4	40	25	12	11	7	1	0
Psychology	3,373	7	38	28	11	9	5	2	0

SOURCE: National Science Foundation

Chart 4. Female science/engineering faculty in doctorate-granting departments: Spring 1980



SOURCE: National Science Foundation

nonfaculty research doctorates

The 1980 survey went beyond the 1968 and 1974 studies by requesting information on nonfaculty research doctorates employed by departments for the sole purpose of conducting research. These people may be principal investigators (as discussed in section III) or they may provide support services to the faculty. Nonfaculty research doctorates are distinguished from postdoctorates who, in addition to providing services, are generally considered to be continuing their training. Also the latter generally serve fixed-term appointments whereas nonfaculty research doctorates are likely to be appointed for indefinite lengths of time. According to the survey results, only a few departments (less than one-tenth of the total) limit the eligibility of nonfaculty doctorates to submit research proposals.[10] In contrast, postdoctorates are generally not eligible to apply independently for project support.

Nonfaculty research doctorates have become an important component of academic S/E staffing. In the spring of 1980, the surveyed departments employed about 4,200 of this group, about 1 nonfaculty research doctorate for each 10 full-time S/E faculty. These nonfaculty research doctorates were not evenly distributed. The 50 institutions receiving the most Federal R&D support and private institutions as a group both maintained higher than average ratios of research doctorates to faculty. About four-fifths of the nonfaculty research doctorates worked in departments in the biological and physical sciences.[11]

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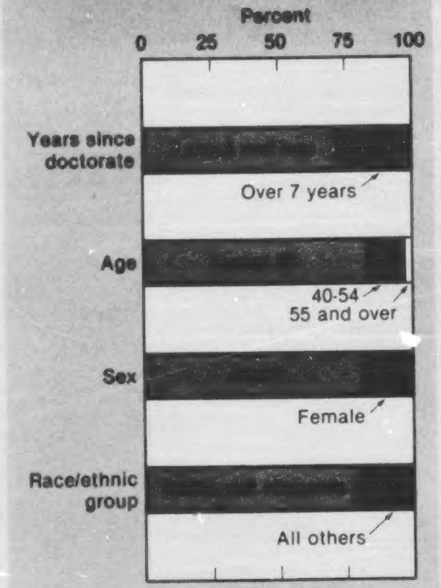
[10] A 1977 federally supported survey found that one-fourth of graduate science departments limited the eligibility of all nontenure-track personnel to apply for support as principal investigators. The question in that survey treated nontenure-track faculty and nonfaculty research doctorates together so it is not strictly comparable to the 1980 survey which dealt only with the latter. See Frank J. Atelsek and Irene L. Gomberg, *Nontenure-Track Science Personnel: Opportunities for Independent Research* (Washington, D.C., American Council on Education, 1978).

Nonfaculty research doctorates are, on average, much younger and less experienced than are faculty (chart 5). Of the former, 72 percent have held their degrees for seven years or less as compared to the 21 percent of faculty who are recent doctorates. For the two groups, faculty and nonfaculty research doctorates combined, about one in four had held their degrees for seven years or less. Consistent with their fewer years of experience, 83 percent of research doctorates are under the age of 40 as compared to 37 percent of faculty. Another difference between the groups is that women comprise a larger share of research doctorates than of faculty, 19 percent versus 7 percent. Women make up almost one-half the psychology nonfaculty research doctorates, but only 1 in 25 of nonfaculty engineers were female. Finally, members of race/ethnic minority groups constitute 22 percent of nonfaculty research doctorates as opposed to 8 percent of full-time faculty.

Chart 5. Full-time nonfaculty research doctorates in doctorate-granting departments: demographic characteristics: Spring 1980



SOURCE: National Science Foundation

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[11] This level is fairly close to the two-thirds share of Federal academic R&D support going to these two fields. See National Science Foundation, *National Patterns of Science and Technology Resources, 1980* (NSF 80-308) (Washington, D.C.: Supt. of Documents, U.S. Government Printing Office).

section II

faculty appointments and departures

The flow of recent doctorates into academia depends, first, upon the number of faculty positions which become vacant each year and, second, upon whether recent or senior doctorates or nondoctorates are appointed to fill these vacancies. About 5 percent of S/E faculty, or 2,200 in the surveyed departments, left the institutions at which they were employed prior to the 1979/80 academic year (table 4.) Departures were about evenly split between tenured and nontenured faculty. These exits were more than matched by the approximately 2,800 appointments for 1979/80, thus indicating about 1.5 percent aggregate growth in faculty positions (table 5).[12] As explained below, about four-tenths of these appointees were experienced scientists and engineers coming from other full-time jobs.

The broad fields varied little in their attrition rates and each experienced at least some staff growth. The relative uniformity of these turnover patterns does not correspond with apparent changes in the distribution of instructional burden among S/E fields. For example, social sciences baccalaureates nationwide dropped about 23 percent between 1973/74 and 1979/80 compared to over 53-percent growth in engineering bachelor's degrees between 1975/76 and 1979/80. The growth in engineering faculty would have been greater had engineering colleges been able to fill all their budgeted positions. Another NSF-supported survey found that about 10 percent of such slots were vacant at the start of the 1980/81 academic year.[13]

Overall, about one-third of turnover consisted of voluntary transfers of experienced faculty among academic institutions.[14] Intra-academic mobility was most marked in psychology and the mathematical and social sciences where it accounted for two-fifths of exits.

Survey results support anecdotal information that academia is a net donor of experienced scientists and engineers to other sectors. After the 1978/79 academic year, about 1 percent of university S/E faculty voluntarily resigned to take nonacademic jobs whereas only one-third as many left industry for academia with an unknown, but probably much smaller number coming from government and nonprofit institutions.[15] The highest level of exchange between academia and other sectors was in engineering, the only broad field in which industry was a major source of appointees. Although such sectoral mobility reflects the often close correspondence between industrial and academic engineering activities, these transfers

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[12] This growth rate compares to a 3.2-percent increase in the number of full-time S/E staff between 1979 and 1980 in the 100 doctorate-granting institutions employing the most scientists and engineers. S/E staff include not only faculty but also postdoctorates, nonfaculty researchers, and other scientists and engineers working in institutional administration and operations. See National Science Foundation, *Academic Science: Scientists and Engineers, January 1980* (Detailed Statistical Tables) (NSF 81-307) (Washington, D.C., 1981).

[13] National Science Foundation, *Science Resources Studies Highlights*, "Engineering Colleges Report 10% of Faculty Positions Vacant in Fall 1980," November 2, 1981 (Washington, D.C.).

[14] This proportion assumes that none of the faculty appointments for 1979/80 had earlier been denied tenure at another institution.

[15] The survey question on origins of new appointees combined those from these two sectors with those whose previous status was "other or unknown."

Table 4. Reasons for departures of full-time science/engineering faculty who left their 1978/79 positions (Percent)

Field	Total		Voluntary resignation			Involuntary resignation		
		Retirement	Illness or death	Another academic position	Non-academic position	Other	Failure to receive tenure	Other
All selected fields	100	20	4	34	20	6	12	5
Engineering	100	23	5	32	28	6	5	1
Physical sciences	100	27	6	21	23	8	13	3
Biological sciences	100	23	4	32	14	6	16	6
Mathematical/computer sciences	100	11	5	39	20	5	12	9
Social sciences	100	19	3	39	13	6	14	7
Psychology	100	12	2	42	21	3	17	3

SOURCE National Science Foundation

Table 5. Prior professional status for full-time faculty appointments: 1979/80 (Percent)

Field	Total	Full-time graduate student	Post-doctorate	Full-time faculty or staff	Full-time industrial employee	Other or unknown
All selected fields	100	34	22	33	6	5
Engineering	100	41	10	26	17	6
Physical sciences	100	18	42	30	5	5
Biological sciences	100	11	51	34	2	3
Mathematical/computer sciences	100	43	10	36	2	9
Social sciences	100	51	5	36	3	4
Psychology	100	39	15	39	1	7

SOURCE National Science Foundation

came to only 1 percent to 2 percent of engineering faculty.[16]

The remainder of faculty separations were for causes other than voluntary changing of employers. Retirement, the most frequent of these other causes, accounted for about one-fifth of those leaving in all S/E fields. These exits equalled about 1 percent of total faculty. This comparatively low level results from the relatively small numbers who are near retirement age. Recent Federal law will raise the mandatory retirement age in universities and colleges to 70, effective in 1982, suggesting that retirements may continue to be fairly limited for several years. Delayed retirements would tend to increase the fairly small attrition caused by death or illness.

Involuntary separations due to failure to receive tenure caused one in eight departures. The much lower level in engineering (only 1 in 20 exits) presumably is caused at least in part by the difficulty colleges of engineering have had in filling faculty slots and the resulting eased competition for tenure. Other involuntary separations resulting from factors such as forced reduction in department size caused another 1 in 20 departures. This residual category of involuntary separations was most significant in the mathematical sciences where it accounted for 1 in 11 exits.

As mentioned above, about four-tenths of those joining S/E departments in 1979/80 had held full-time jobs elsewhere the previous year. The remaining appointees had been full-time graduate students or postdoctorates (excluding the small number of new faculty whose prior status was "other or unknown") and hence could be assumed to be recent doctorates.[17] Thus in 1979/80, first-year appointees who were recent doctorates without previous full-time jobs came to about 4 percent of doctoral full-time faculty. If this percentage were to hold in the future, about 25 percent of university doctoral faculty would consist of recent doctorates. (This calculation assumes that in the future as now about two-fifths of recent doctorates, particularly those in the physical and biological sciences, would continue to take postdoctoral training prior to their faculty appointments.)[18] This level compares to the "optimal" level of 30 percent desired by department heads.

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[16] These figures are consistent with the findings of a recent NSF-supported survey. This study found that 2 percent of experienced engineering faculty after 1979/80 voluntarily switched to industry from the 50 engineering colleges receiving the most Federal R&D obligations. Frank J. Atelsek and Irene L. Gomberg, *Recruitment and Retention of Full-Time Engineering Faculty, Fall 1980*, Higher Education Panel Reports No. 52 (Washington, D.C.: American Council on Education, October 1981), table 13, p. 19.

[17] This, of course, assumes all new university S/E faculty have completed their doctorates when, in fact, some are in the final stages of their dissertation work when hired.

[18] In 1980, about 30 percent of new S/E Ph.D.'s planned postdoctoral study—about the same number as who planned immediate academic employment. See National Academy of Sciences, *Summary Report, 1980 Doctorate Recipients from United States Universities* (Washington, D.C., 1981).

research activities of recent doctorates

The extent to which young doctorates can add to S/E knowledge is in large part determined by the level of their research support. This section compares the access of younger and senior doctoral faculty to research funding. Specific points of comparison between the two groups include the number of research proposals submitted; rates of success in gaining support; percentages of faculty receiving Federal funds; the project status of researchers on Federal grants and contracts; and the percentages of faculty working in Federal or industrial laboratories. In addition to collecting such quantitative data, the survey asked department heads to judge whether recent doctorates received an appropriate fraction of research funds and whether younger faculty were less likely to submit research proposals than they had been five years earlier.

number of proposals submitted and funded

For most S/E faculty, the chief means of gaining support for research is through submitting proposals to external sponsors, particularly the Federal Government. (According to another NSF survey, three-fourths of S/E faculty time spent in research is sponsored, including nonfederally, and separately budgeted.)[19] When all fields were combined, recent and senior doctorates differed very little in the number of proposals submitted. Both groups averaged almost one research proposal per person in academic year 1978/79 (chart 6). For comparison, full-time nondoctoral faculty and nonfaculty research doctorates submitted an average of only one proposal for each four to five staff. At the level of the six broad S/E fields, the largest differences in proposal activity were in engineering and the physical sciences where recent doctorates averaged 1.4 proposals per year and senior doctorates 1.2 and 1.1, respectively. In the three broad fields with the lowest submission rates—the mathematical and social sciences and psychology—both groups had about one proposal for each two faculty per year. Just as years since doctorate did not seem to affect proposal activity greatly, whether a faculty member's institution was publicly or privately controlled also seemed to have little relation to the number of funding requests made. In contrast, departments that were rated "distinguished" or

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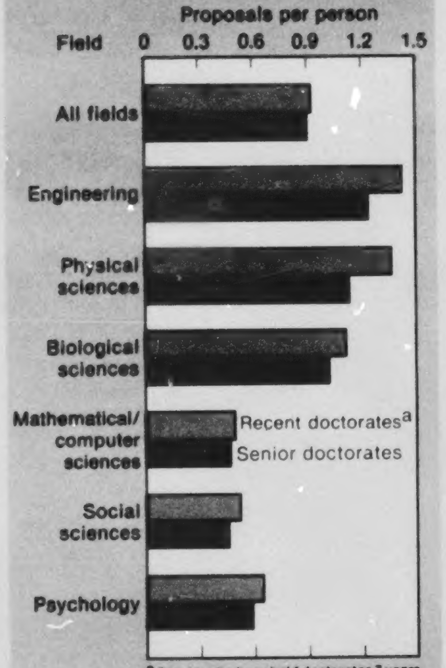
[19] National Science Foundation, *Science Resources Studies Highlights*, "University Science and Engineering Faculty Spend One-Third of Professional Time in Research (NSF 81-317), August 31, 1981 (Washington, D.C.).

Chart 6. Average number of proposals submitted per full-time faculty member in doctorate-granting departments: July 1, 1978 to June 30, 1979



[a] Faculty who have held doctorates 7 years or less.

SOURCE: National Science Foundation

"strong" in the Roose-Andersen study or that were in the top 50 institutions in Federal R&D funding averaged about two-tenths more proposals per person per year than did those in other departments.

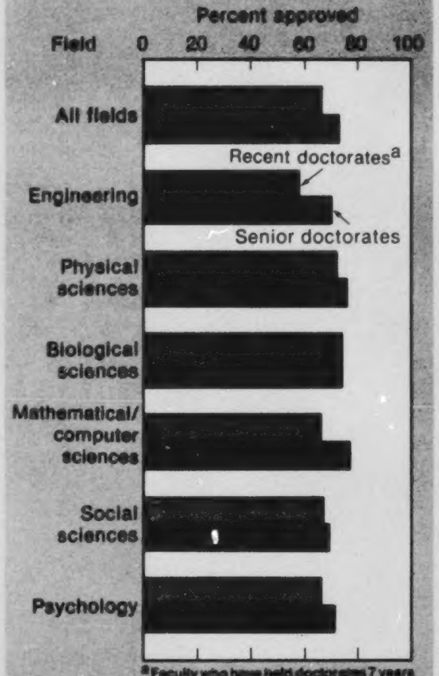
Research sponsors approved a larger percentage of requests for support from senior doctorates than from their younger colleagues. Because the two groups were very close in the number of proposals submitted, senior doctorates therefore had a somewhat higher number of approved proposals per person.[20] Overall, recent doctorates had gained funding for two-thirds of those 1978/79 proposals which had been either approved or rejected by the time of the survey (chart 7). (The 11 percent of proposals from both groups whose disposition had not yet been determined was excluded from the calculation of these approval rates.) Senior doctorates fared better, gaining approval for 73 percent of their proposals. The gap in fractions of proposals funded was widest in engineering, 70 percent for senior and 58 percent for recent doctorates, and the mathematical sciences, 77 percent and 66 percent, respectively. In the biological sciences, both groups had the same approval rate, 74 percent. In the remaining broad fields, senior doctorates had approval rates that were two to five percentage points higher than those of younger faculty.

Faculty at private institutions were more successful than those in publicly supported universities and medical colleges in gaining research support, 76 percent versus 71 percent of proposals approved. Applicants in the 50 institutions receiving the most Federal R&D funds also fared better than did other faculty, 77 percent versus 67 percent approved.

The fraction of younger researchers with federal support is a key indicator of their overall access to funding. Two statistics highlight the importance of this source of sponsored assistance. Through grants and contracts the Federal Government provides about two-thirds of the separately budgeted funds used for academic research.[21] Similarly, three out of five hours devoted to academic research, including that which is not separately budgeted, are spent on federally supported projects.[22]

Over time, recent doctorates with Federal support have accounted for a varying proportion of all younger doctoral faculty who are active in research.[23] In 1980 this proportion was 53 percent, slightly more than in 1974 when it was 47 percent, but less than the 1968 value of 57 percent. In each survey year, the comparable proportions for senior doctorates were about 15 percentage points higher.

Chart 7. Percentage of proposals approved in doctorate-granting departments: 1978/79



[a] Faculty who have held doctorates 7 years or less.

SOURCE: National Science Foundation

The prevalence of Federal funding of younger researchers divided the six broad fields into two groups. In engineering and the physical and biological sciences about 70 percent or more of recent doctorates active in research had Federal support. In contrast, only about 30 percent to 40 percent of younger researchers in psychology and the mathematical and social sciences received Federal assistance.

opinions of department heads

The survey asked department heads to evaluate the appropriateness of the distribution of research support between recent and senior doctorate faculty which had resulted from past funding patterns. Almost two-thirds of department heads who responded believed that the existing split in research support was appropriate, a response very similar to that given to the same question in 1968 and 1974 (chart 8).

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[20] The survey did not collect information on the amount of research funding so it is not possible to judge which group had the higher dollar level of support.

[21] National Science Foundation, *National Patterns of Science and Technology Resources, 1980* (NSF 80-308), *op cit.*

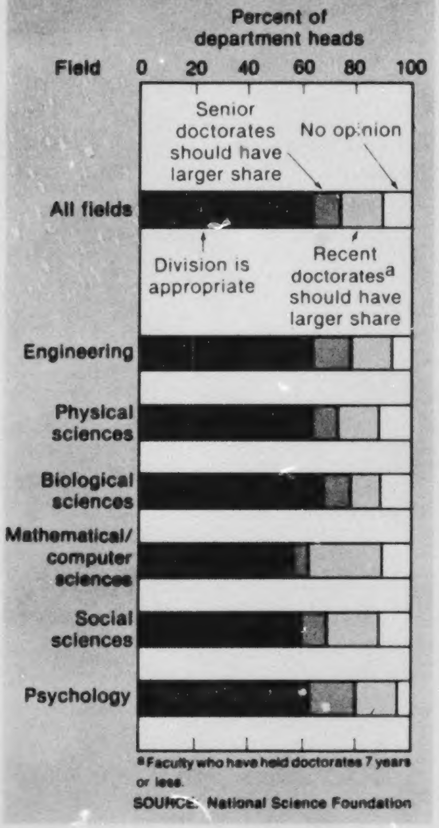
[22] National Science Foundation, *Science Resources Studies Highlights*, "University Science and Engineering Faculty Spend One-Third of Professional Time in Research," *op cit.*

[23] These are defined as those who, according to their department heads, spend one-fifth or more of their professional time on research.

Those expressing a contrary opinion (about one-fourth of the respondents) were about equally divided as to which group should get a larger share of the funding, with a slightly larger percentage supporting younger faculty. The almost equal division of opinion in the 1980 survey is a sharp departure from 1968 and 1974 when department heads who disapproved of existing splits of research support favored recent doctorates by a margin of better than 5 to 1. In 1980 the greatest dissatifaction with the existing split in support was in the mathematical sciences where 27 percent of department heads believed younger faculty received too small a share, compared to only 6 percent who felt that senior faculty received less than was appropriate.

Department heads were also asked to judge whether recent doctorates in 1980 were more or less likely to submit research proposals than were recent doctorates in 1975. About one-half of the responding heads believed that younger faculty were submitting a larger number of proposals, whereas about one-third believed that the level of activity had not changed over time.

Chart 8. Opinions of department heads about division of research funds, doctorate-granting departments: Spring 1980



[a] Faculty who have held doctorates 7 years or less.

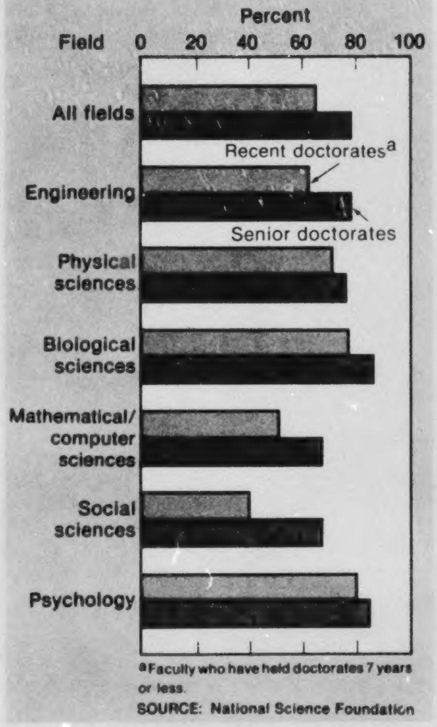
SOURCE: National Science Foundation

federally supported principal investigators

The designation of principal investigator indicates a substantial degree of independence in conducting a research project. About two-thirds of recent doctorates working on Federal grants and contracts had this designation as compared to over three-fourths of senior doctoral faculty, one-half of nondoctorates, and only one-seventh of nonfaculty research doctorates. The slightly higher percentage of senior doctorates who are principal investigators suggests they may sometimes enjoy greater latitude in planning and executing their research than do recent doctorates.

Senior doctorates maintained their edge in having the status of principal investigator in all six broad S/E fields (chart 9). The widest margin was in the social sciences, where two-thirds were principal investigators in contrast to two-fifths of recent doctorates so designated. The smallest gaps were in psychology and the physical sciences where only a few percentage points separated recent and senior doctoral researchers.

Chart 9. Percent of full-time faculty with Federal research support who are principal investigators in doctorate-granting departments: Spring 1980



[a] Faculty who have held doctorates 7 years or less.

SOURCE: National Science Foundation

research in federal and industrial laboratories

A small proportion of recent doctorates participated in research projects in Federal and industrial laboratories during the 12-month period prior to the survey. Overall, 1 out of 20 who were active[24] in research had worked in a Federal laboratory and 1 out of 50 in industrial facilities. These levels of participation, which are very close to those found in 1974, were slightly lower than those found among senior doctorates. The physical sciences and engineering accounted for two-thirds of younger faculty in 1980 with research at Federal installations. Engineering doctorates made up one-half of the small group of younger faculty who had worked in industrial laboratories.

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[24] See footnote 23.

appendixes

a. technical notes
b. detailed statistical tables
c. reproduction of survey instruments

appendix a

technical notes

The study described full-time S/E faculty in all the 156 institutions that awarded at least one science or engineering doctorate degree in 1975/76 and that received at least $1.4 million in Federal funds for research and development in 1977. Of these institutions, 54 were private and 102 were public. The survey included 89 medical colleges, of which 11 were independent institutions.

Nineteen academic fields were covered in the survey, including four departments (civil engineering, computer science, mechanical engineering, and political science) that were not included in either the 1968 or 1974 NSF surveys of faculty characteristics. The other 15 fields were biochemistry, biology, botany, chemical engineering, chemistry, economics, electrical engineering, geology, mathematics, microbiology, physics, physiology, psychology, sociology and zoology.

The total number of departments that offered doctorate-level programs in these fields in 1980 was estimated to be 1,870. Of these 1,640 were in graduate schools and 230 were in colleges of medicine. An estimated 39,760 faculty members were included in these departments.

The survey was initiated by identifying and contacting a survey coordinator at each institution covered in the study. The coordinators, usually deans or other school officials of similar rank, were sent packages of materials in April 1980. Each package included a cover letter, a list of departments to be surveyed, survey instructions for each department, copies of the questionnaire, and individual faculty sheets. The coordinators were asked to distribute materials to the appropriate departments, collect the completed questionnaires, and return them to Westat, Inc., the contractor for the study.

The individual faculty sheets provided the department heads with a convenient method of collecting the data from the faculty members. If the department heads wished to use the sheets, they were distributed to the faculty members for them to fill out, and then they were returned to the chairpersons. The department heads collated the responses and entered the results on the survey questionnaires. Individual faculty sheets were retained only within the departments. If these sheets were not used, department heads employed other resources to obtain the survey information.

About one month after the initial mailing, a telephone call was placed to the coordinator if no response had been received. In some cases, several followup telephone calls were necessary. The survey procedures resulted in a high response rate. Only four institutions failed to participate in the study. Of the 1,870 eligible departments in the participating institutions, 1,467 returned usable survey forms for a response rate of 79 percent.

The returned questionnaires first were edited manually to check completeness and consistency. Problems were resolved by followup telephone calls to respondents when necessary. Most of the nonresponses and inconsistencies thus were eliminated. In the relatively few cases where the problems could not be corrected, the nonresponses were classified as "no reply" and the inconsistencies were retained. The latter accounted for less than one-half of 1 percent of all the responses to the questions.

A computer file of responses to the survey questions then was created. The file included weights that adjust for nonresponding departments, as well as data on the control of each institution (whether public or private), institutional R&D funding from Federal sources, and graduate student enrollment in each department.

The data analyses primarily consisted of separate tabulations of results for fields and groups of fields, by institutional control, level of institutional R&D funding from Federal sources, and other variables. The survey results were weighted to adjust for nonresponding departments by assigning differential weights to the responses of each department. These adjustment factors were calculated by first classifying all departments into categories defined by field, control of institution, and total graduate enrollment. With the groupings thus established, the nonresponse weight for all departments in a particular category was the reciprocal of the ratio of responding departments to all departments in that category.

22

appendix b

detailed statistical tables

Page

Table B-1. Number of surveyed doctorate-level departments in public and private institutions by field: Spring 1980 17

Table B-2. Number of surveyed doctorate-level departments by Roose-Andersen rating and field: Spring 1980 18

Table B-3. Number of surveyed doctorate-level departments by graduate enrollment and field: Spring 1980 19

Table B-4. Number of survyed doctorate-level departments by level of total Federal R&D obligations to institution and field: Spring 1980 20

Table B-5. Opinions of surveyed department heads of the optimal proportion of full-time recent doctorate faculty in their departments by field: Spring 1980 21

Table B-6. Full-time faculty in surveyed departments by academic rank and field: Spring 1980 22

Table B-7. Full-time faculty in surveyed departments by academic rank, doctoral status, and field: Spring 1980 23

Table B-8. Full-time faculty in surveyed departments by tenure status and field: Spring 1980 25

Table B-9. Full-time faculty in surveyed departments by tenure status, doctoral status, and field: Spring 1980 26

Table B-10. Nontenured full-time faculty on tenure track in surveyed departments by doctoral status and field: Spring 1980 30

Table B-11. Full-time faculty in surveyed departments by academic rank, control of institution, doctoral status, and field: Spring 1980 32

Table B-12. Full-time faculty in surveyed departments by tenure status, control of institution, doctoral status, and field: Spring 1980 35

Table B-13. Full-time faculty in surveyed departments by academic rank, Roose-Andersen department rating, and field: Spring 1980 37

Table B-14. Full-time faculty in surveyed departments by tenure status, Roose-Andersen department rating, and field: Spring 1980 38

Table B-15. Full-time faculty in surveyed departments by academic rank, level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980 39

Table B-16. Full-time faculty in surveyed departments by tenure status, level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980 45

Table B-17. Full-time faculty in surveyed departments by academic rank, graduate enrollment, doctoral status, and field: Spring 1980 48

Table B-18. Full-time faculty in surveyed departments by tenure status, graduate enrollment, doctoral status, and field: Spring 1980 54

Table B-19. Number of surveyed departments, full-time faculty, and full-time and total graduate students, by control of institution and field: Spring 1980 . 57

Table B-20. Total and mean number of full-time faculty per surveyed department by control of institution and field: Spring 1980 . 59

Table B-21. Full-time faculty in surveyed departments by age, doctoral status, and field: Spring 1980 60

Table B-22. Full-time faculty in surveyed departments, by broad racial/ethnic category, doctoral status, and field: Spring 1980 62

Table B-23. Full-time racial/ethnic minority faculty in surveyed departments by minority group, doctoral status, and field: Spring 1980 63

Table B-24. Full-time faculty in surveyed departments by sex, doctoral status, and field: Spring 1980 67

Table B-25. Full-time nonfaculty research doctorates in surveyed departments by doctoral status and field: Spring 1980 68

Table B-26. Full-time nonfaculty research doctorates in surveyed departments by control of institution, doctoral status, and field: Spring 1980 69

Table B-27. Full-time nonfaculty research doctorates in surveyed departments by Roose-Andersen department rating, doctoral status, and field: Spring 1980 70

Table B-28. Full-time nonfaculty research doctorates in surveyed departments by level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980 71

Table B-29. Full-time nonfaculty research doctorates in doctorate-level departments by graduate enrollment, doctoral status, and field: Spring 1980 72

Table B-30. Full-time nonfaculty research doctorates in surveyed departments by sex and field: Spring 1980 73

Table B-31. Full-time nonfaculty research doctorates in surveyed departments by age and field: Spring 1980 74

Table B-32. Full-time nonfaculty research doctorates in departments by broad racial/ethnic category and field: Spring 1980 75

Table B-33. Full-time racial/ethnic minority nonfaculty research doctorates in surveyed departments by minority group, doctoral status, and field: Spring 1980 76

Table B-34. Full-time faculty appointments in surveyed departments by tenure status and field: Spring 1980 79

Table B-35. Full-time faculty appointments in 1979-80 in surveyed departments by prior professional status of appointees, Roose-Andersen department rating, and field 80

Table B-36. Full-time faculty appointments in 1979-80 in surveyed departments by prior professional status of appointees, level of total Federal R&D obligations to institution, and field 82

Table B-37. Full-time tenured and nontenured faculty who left their positions in surveyed departments in 1978-79, by reason for departure and field 85

Table B-38. Research proposals submitted during 1978-79 by full-time recent, senior, and nondoctorate faculty in surveyed departments, by proposal disposition and field 87

Table B-39. Number of research proposals submitted per person during 1978-79 by full-time recent, senior, and nondoctorate faculty in surveyed departments, and percent of proposals funded, by field 88

Table B-40. Number of research proposals submitted per person during 1978-79 by full-time recent and senior nonfaculty research doctorates in surveyed departments, and percent of proposals funded, by field 89

Table B-41. Number of research proposals submitted per person during 1978-79 by full-time faculty in surveyed departments, and percent of proposals funded, by control of institution 90

Table B-42. Number of research proposals submitted per person during 1978-79 by full-time nonfaculty research doctorates in surveyed departments, and percent funded, by control of institution and field ... 91

Table B-43. Number of research proposals submitted per person during 1978-79 by full-time faculty in surveyed departments, and percent of proposals funded, by Roose-Andersen department rating and field 92

Table B-44. Number of research proposals submitted per person during 1978-79 by full-time nonfaculty research doctorates in surveyed departments, and percent of proposals funded, by Roose-Andersen department rating and field 93

Table B-45. Number of research proposals submitted per person during 1978-79 by full-time faculty in surveyed departments, and percent funded, by level of institutional funding from Federal R&D sources and field 94

Table B-46. Number of research proposals submitted per person during 1978-79 by full-time nonfaculty research doctorates in surveyed departments, and percent of proposals funded, by level of total Federal R&D obligations to institution and field 95

Table B-47. Number of research proposals submitted per person during 1978-79 by full-time faculty in surveyed departments, and percent funded, by graduate enrollment and field 96

Table B-48. Number of research proposals submitted per person during 1978-79 by full-time nonfaculty research doctorates in surveyed departments, and percent of proposals funded, by graduate enrollment and field 97

Table B-49. Participation in research at industrial and Federal laboratories by full-time recent and senior faculty active in research in surveyed departments by field: Spring 1980 98

Table B-50. Participation in research at industrial and Federal laboratories by full-time faculty active in research in surveyed departments by control of institution and field: Spring 1980 99

Table B-51. Participation in research at industrial and Federal laboratories by full-time faculty active in research in surveyed departments by Roose-Andersen department rating and field: Spring 1980 .. 100

Table B-52. Participation in research at industrial and Federal laboratories by full-time faculty active in research in surveyed departments by level of total Federal R&D obligations to institution and field: Spring 1980 101

Table B-53. Participation in research at industrial and Federal laboratories by full-time faculty active in research in surveyed departments by graduate enrollment and field: Spring 1980 102

Table B-54. Full-time faculty in surveyed departments engaged in federally funded research by doctoral status and field: Spring 1980 103

Table B-55. Full-time nonfaculty research doctorates in surveyed departments engaged in federally funded research by doctoral status and field: Spring 1980 104

Table B-56. Full-time faculty in surveyed departments engaged in federally funded research, by investigator status, doctoral status, and field: Spring 1980 105

Table B-57. Full-time nonfaculty research doctorates in surveyed departments engaged in federally funded research, by investigator status, doctoral status, and field: Spring 1980 107

Table B-58. Opinions of surveyed department chairpersons on the appropriate division of research funds between full-time recent and senior faculty by field: Spring 1980 109

Table B-59. Opinions of surveyed department chairpersons on the likelihood of full-time recent doctorate faculty submitting research proposals, compared to five years ago, by field: Spring 1980 110

Table B-60. Trends in distribution of full-time recent, senior, and nondoctorate faculty in surveyed departments by field and year ... 111

Table B-61. Trends in distribution of full-time recent, senior, and nondoctorate faculty in surveyed departments, by control of institution, field, and year 112

Table B-62. Trends in proportions of full-time faculty in surveyed departments who have tenure, by field and year 113

Table B-63. Trends in proportions of full-time recent, senior, and nondoctorate faculty in surveyed departments who have tenure, by field and year 114

Table B-64. Trends in proportions of full-time recent, senior and nondoctorate faculty in surveyed departments who have tenure, by control of institution, field, and year 115

Table B-65. Trends in proportions of department heads indicating that the division of research funds between recent and senior doctorates is appropriate, by field and year 116

Table B-1. Number of surveyed doctorate-level departments in public and private institutions by field: Spring 1980

Field	Public	Private
All fields	1,270	596
Engineering	270	109
Chemical	62	26
Civil	67	27
Electrical	73	27
Mechanical	68	29
Physical sciences	247	122
Chemistry	90	47
Geology	64	30
Physics	93	45
Biological sciences	353	146
Biology	46	44
Botany	48	2
Zoology	43	1
Biochemistry	78	35
Microbiology	72	31
Physiology	66	33
Mathematical and computer sciences	122	66
Mathematics	80	44
Computer science	42	22
Social sciences	194	109
Economics	69	38
Political science	60	36
Sociology	65	35
Psychology	84	44

Source: National Science Foundation

Table B-2. Number of surveyed doctorate-level departments by Roose-Andersen rating and field: Spring 1980

Field	Roose-Andersen rating	
	Distinguished or strong	Other ratings or not rated
All fields*	401	1,311
Engineering	77	303
Chemical	17	72
Civil	16	78
Electrical	25	75
Mechanical	19	78
Physical sciences	90	279
Chemistry	38	99
Geology	24	70
Physics	28	110
Biological sciences	106	303
Biology*	-	-
Botany	14	36
Zoology	9	35
Biochemistry	31	82
Microbiology	25	78
Physiology	27	72
Mathematical and computer sciences	26	98
Mathematics	26	98
Computer science*	-	-
Social sciences	67	236
Economics	20	87
Political science	26	70
Sociology	21	79
Psychology	36	92

*Biology and computer science departments were not rated in the Roose-Andersen survey.

Source: National Science Foundation

Table B-3. Number of surveyed doctorate-level departments by graduate enrollment and field: Spring 1980

Field	Graduate enrollment*			
	Fewer than 30 students	30-49 students	50-89 students	90 or more students
All fields	541	414	473	438
Engineering	70	75	109	126
Chemical	20	31	24	14
Civil	14	13	28	38
Electrical	15	15	23	48
Mechanical	21	16	34	26
Physical sciences	80	88	111	90
Chemistry	18	22	45	52
Geology	18	25	37	14
Physics	44	41	29	24
Biological sciences	273	112	76	38
Biology	21	26	22	21
Botany	24	13	12	1
Zoology	7	12	21	4
Biochemistry	79	23	7	4
Microbiology	62	23	13	5
Physiology	80	15	1	3
Mathematical and computer sciences	42	53	49	44
Mathematics	37	44	26	17
Computer science	5	9	23	27
Social sciences	59	70	93	81
Economics	13	16	40	37
Political science	20	18	32	27
Sociology	26	36	21	17
Psychology	17	16	35	59

*Full- and part-time as of fall, 1979.

Source: National Science Foundation

Table B-4. Number of surveyed doctorate-level departments by level of total Federal R&D obligations to institution and field: Spring 1980

Field	R & D funding level		
	First 50 institutions*	Second 50 institutions	Remaining institutions
All fields	720	504	642
Engineering	141	97	141
Chemical	33	21	34
Civil	33	26	35
Electrical	38	27	35
Mechanical	37	23	37
Physical sciences	130	99	140
Chemistry	45	38	54
Geology	39	25	30
Physics	46	36	56
Biological sciences	195	138	166
Biology	25	25	40
Botany	21	11	18
Zoology	15	9	20
Biochemistry	48	31	34
Microbiology	45	32	26
Physiology	41	30	28
Mathematical and computer sciences	80	47	61
Mathematics	44	32	48
Computer science	36	15	13
Social sciences	126	88	89
Economics	43	31	33
Political science	42	26	28
Sociology	41	31	28
Psychology	48	35	45

*In total Federal obligations to institutions for research and development, FY 1977.

Source: National Science Foundation

Table B-5. Opinions of surveyed department heads of the optimal proportion of full-time recent* doctorate faculty in their departments by field: Spring 1980

Field	Number of chair-persons	Percent of chairpersons responding for each proportion category									No response (percent)
		Less than 15 percent recent doctor-ates	15-19.99 percent recent doctor-ates	20-24.99 percent recent doctor-ates	25-29.99 percent recent doctor-ates	30-34.99 percent recent doctor-ates	35-39.99 percent recent doctor-ates	40-44.99 percent recent doctor-ates	45-49.99 percent recent doctor-ates	50 or more percent recent doctor-ates	
All fields	1,866	4	6	12	12	12	4	2	2	6	41
Engineering	379	2	5	12	17	14	6	2	1	7	34
Chemical	88	1	4	16	15	12	7	2	2	5	37
Civil	94	2	6	8	17	10	5	5	0	8	40
Electrical	100	4	5	13	18	16	6	1	1	6	30
Mechanical	97	3	5	11	15	18	3	1	3	10	31
Physical sciences	369	5	10	15	16	11	2	1	1	4	34
Chemistry	137	3	7	14	24	11	3	1	1	5	30
Geology	94	3	6	11	18	15	1	2	0	7	37
Physics	138	10	16	17	8	8	3	0	2	0	36
Biological sciences	499	5	6	13	11	10	3	1	3	5	42
Biology	90	4	8	12	19	7	5	3	0	4	37
Botany	50	0	4	19	14	10	0	0	4	0	49
Zoology	44	0	6	8	4	29	0	4	4	5	40
Biochemistry	113	11	5	14	11	8	1	1	3	7	39
Microbiology	103	4	6	12	10	11	3	0	7	5	42
Physiology	99	2	8	14	9	8	8	1	0	4	47
Mathematics and computer science	180	4	4	17	14	20	5	8	4	15	48
Mathematics	124	6	6	13	9	11	2	2	1	2	48
Computer science	64	0	0	2	5	10	4	9	4	19	48
Social sciences	303	1	2	11	8	14	6	4	2	5	48
Economics	107	2	0	10	6	10	4	5	1	6	55
Political science	96	0	4	16	8	17	5	6	0	4	40
Sociology	100	0	2	6	9	17	7	2	4	5	48
Psychology	128	0	5	4	4	15	11	2	3	7	49

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-6. Full-time faculty in surveyed departments by academic rank and field: Spring 1980

Field	All faculty (number)	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	Instructor	Other
All fields	39,760	49	26	21	2	1
Engineering	7,236	53	26	18	2	1
Chemical	1,039	59	18	20	2	1
Civil	1,886	50	29	18	2	1
Electrical	2,313	54	26	17	2	1
Mechanical	1,998	53	26	18	2	1
Physical sciences	8,354	59	23	16	1	2
Chemistry	3,380	59	20	16	2	3
Geology	1,394	54	26	18	1	1
Physics	3,580	61	23	14	1	1
Biological sciences	8,768	44	28	24	2	2
Biology	2,400	43	30	23	3	1
Botany	832	48	28	20	2	2
Zoology	1,005	43	29	21	4	3
Biochemistry	1,676	47	28	21	2	2
Microbiology	1,414	43	26	26	3	2
Physiology	1,441	40	28	28	2	2
Mathematical and computer sciences	5,325	44	29	21	5	2
Mathematics	4,485	45	29	19	5	1
Computer science	840	35	26	31	5	3
Social sciences	6,704	46	25	26	2	1
Economics	2,517	47	22	25	4	2
Political science	2,204	50	25	24	1	0
Sociology	1,983	40	28	29	2	1
Psychology	3,373	47	26	24	1	1

Source: National Science Foundation

Table B-7. Full-time faculty in surveyed departments by academic rank, doctoral status, and field: Spring 1980

Field and doctoral status	All faculty (number)	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	Instructor	Other
All fields	39,760	49	26	21	2	2
Recent doctorates*	8,445	2	15	78	3	2
Senior doctorates	29,477	65	29	5	0	1
Nondoctorates	1,838	21	20	16	32	11
Engineering	7,236	53	26	18	2	1
Chemical	1,039	59	18	20	2	2
Recent doctorates	234	4	17	78	0	2
Senior doctorates	759	77	19	3	0	1
Nondoctorates	46	32	18	7	31	13
Civil	1,886	50	29	18	2	1
Recent doctorates	405	3	26	70	1	0
Senior doctorates	1,213	67	30	3	0	0
Nondoctorates	268	42	29	12	14	3
Electrical	2,313	54	26	17	2	1
Recent doctorates	405	1	17	79	2	1
Senior doctorates	1,729	68	28	3	0	1
Nondoctorates	179	37	29	14	18	2
Mechanical	1,998	53	26	18	2	1
Recent doctorates	379	4	15	79	1	0
Senior doctorates	1,331	71	27	2	0	0
Nondoctorates	288	38	34	11	13	4
Physical sciences	8,354	59	23	16	1	2
Chemistry	3,380	59	20	16	2	3
Recent doctorates	536	2	9	78	5	6
Senior doctorates	2,786	71	23	4	0	2
Nondoctorates	57	4	15	13	39	28
Geology	1,394	54	26	18	1	1
Recent doctorates	268	0	17	81	2	0
Senior doctorates	1,098	68	28	3	0	1
Nondoctorates	28	29	17	33	8	13
Physics	3,580	61	23	14	1	1
Recent doctorates	388	1	8	86	4	1
Senior doctorates	3,141	70	25	5	0	0
Nondoctorates	51	12	41	18	12	17
Biological sciences	8,768	44	28	24	2	2
Biology	2,400	43	30	23	3	1
Recent doctorates	469	0	7	83	5	4
Senior doctorates	1,880	55	36	9	0	0
Nondoctorates	51	4	14	15	61	7
Botany	832	48	28	20	2	3
Recent doctorates	164	8	18	68	1	5
Senior doctorates	618	62	32	6	0	0
Nondoctorates	50	6	9	41	25	19

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-7. Full-time faculty in surveyed departments by academic rank, doctoral status and field: Spring 1980 -- con.

Field and doctoral status	All faculty (number)	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	Instructor	Other
Biological sciences (continued)						
Zoology	1,005	43	29	21	4	3
Recent doctorates*	235	3	14	77	4	2
Senior doctorates	703	59	36	5	0	0
Nondoctorates	68	5	19	3	46	27
Biochemistry	1,676	47	28	21	2	2
Recent doctorates	241	1	7	82	6	4
Senior doctorates	1,417	55	32	11	0	2
Nondoctorates	19	0	17	27	43	13
Microbiology	1,414	43	26	26	3	2
Recent doctorates	251	2	8	81	5	3
Senior doctorates	1,121	53	31	14	1	1
Nondoctorates	43	43	8	16	42	34
Physiology	1,441	40	28	28	2	2
Recent doctorates	327	3	12	74	8	2
Senior doctorates	1,092	52	33	14	0	1
Nondoctorates	22	7	16	14	35	28
Mathematical and computer sciences	5,325	44	29	21	5	2
Mathematics	4,485	45	29	19	5	1
Recent doctorates	988	1	14	71	11	2
Senior doctorates	3,251	62	35	4	0	0
Nondoctorates	246	7	18	18	46	11
Computer science	840	35	26	31	5	3
Recent doctorates	310	1	19	78	2	40
Senior doctorates	462	61	34	3	0	1
Nondoctorates	69	9	5	12	48	25
Social sciences	6,704	46	25	26	2	1
Economics	2,517	47	22	25	4	2
Recent doctorates	762	2	21	76	0	1
Senior doctorates	1,588	74	24	1	0	1
Nondoctorates	167	6	7	21	55	11
Political science	2,204	50	25	24	1	0
Recent doctorates	565	1	17	83	0	0
Senior doctorates	1,576	69	25	3	0	0
Nondoctorates	63	21	0	24	45	10
Sociology	1,983	40	28	29	2	1
Recent doctorates	608	3	16	80	1	1
Senior doctorates	1,294	59	35	5	0	0
Nondoctorates	80	13	11	22	44	10
Psychology	3,373	48	26	24	1	1
Recent doctorates	910	3	14	80	1	3
Senior doctorates	2,420	65	31	3	0	1
Nondoctorates	43	5	3	26	53	14

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-8. Full-time faculty in surveyed departments by tenure status and field: Spring 1980

Field	All faculty (number)	Tenured (percent)	Nontenured (percent)
All fields	39,760	74	26
Engineering	7,236	75	25
Chemical	1,039	73	27
Civil	1,886	73	27
Electrical	2,313	77	23
Mechanical	1,998	76	24
Physical sciences	8,354	81	19
Chemistry	3,380	79	21
Geology	1,394	78	22
Physics	3,580	83	17
Biological sciences	8,768	71	29
Biology	2,400	73	27
Botany	832	80	20
Zoology	1,005	72	28
Biochemistry	1,676	73	27
Microbiology	1,414	66	34
Physiology	1,441	63	37
Mathematical and computer sciences	5,325	73	27
Mathematics	4,485	75	25
Computer science	840	59	41
Social sciences	6,704	70	30
Economics	2,517	67	33
Political science	2,204	74	26
Sociology	1,983	69	31
Psychology	3,373	73	27

Source: National Science Foundation

Table B-9. Full-time faculty in surveyed departments by tenure status, doctoral status, and field: Spring 1980

Field and doctoral status	Number of faculty	Tenured (percent)	Nontenured (percent)
All fields	39,760	74	26
Recent*	8,445	14	86
Senior	29,477	93	7
Nondoctorate	1,838	53	47
Engineering	7,236	75	25
Recent	1,423	14	86
Senior	5,032	93	7
Nondoctorate	781	75	25
Chemical	1,039	73	27
Recent	234	16	84
Senior	759	92	8
Nondoctorate	46	61	39
Civil	1,886	73	27
Recent	405	20	80
Senior	1,213	92	8
Nondoctorate	268	70	30
Electrical	2,313	77	23
Recent	405	11	89
Senior	1,729	93	7
Nondoctorate	179	73	27
Mechanical	1,998	76	24
Recent	379	12	88
Senior	1,331	93	7
Nondoctorate	288	82	18
Physical sciences	8,354	81	19
Recent	1,192	9	91
Senior	7,026	94	6
Nondoctorate	136	54	46
Chemistry	3,380	79	21
Recent	536	9	91
Senior	2,787	94	6
Nondoctorate	57	40	60

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-9. Full-time faculty in surveyed departments by tenure status, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Number of faculty	Tenured (percent)	Nontenured (percent)
Physical sciences (continued)			
Geology	1,394	78	22
Recent*	268	12	88
Senior	1,098	94	6
Nondoctorate	28	65	35
Physics	3,580	83	17
Recent	388	9	91
Senior	3,141	93	7
Nondoctorate	51	66	34
Biological sciences	8,768	71	29
Recent	1,686	12	88
Senior	6,830	86	14
Nondoctorate	252	40	60
Biology	2,400	73	27
Recent	469	7	93
Senior	1,880	90	10
Nondoctorate	51	54	46
Botany	832	80	20
Recent	164	30	70
Senior	618	96	4
Nondoctorate	50	45	55
Zoology	1,005	72	28
Recent	235	18	82
Senior	702	94	6
Nondoctorate	68	34	66
Biochemistry	1,676	73	27
Recent	241	9	91
Senior	1,416	85	15
Nondoctorate	19	43	57

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-9. Full-time faculty in surveyed departments by tenure status, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Number of faculty	Tenured (percent)	Nontenured (percent)
Biological sciences (continued)			
Microbiology	1,414	66	34
Recent*	251	9	91
Senior	1,120	80	20
Nondoctorate	43	23	77
Physiology	1,441	63	37
Recent	327	12	88
Senior	1,092	79	21
Nondoctorate	22	50	50
Mathematical and computer sciences	5,325	73	27
Recent	1,298	13	87
Senior	3,713	96	4
Nondoctorate	315	42	58
Mathematics	4,485	75	25
Recent	988	12	88
Senior	3,251	96	4
Nondoctorate	246	49	51
Computer science	840	59	41
Recent	310	15	85
Senior	461	94	6
Nondoctorate	69	20	80
Social sciences	6,704	70	30
Recent	1,935	17	83
Senior	4,459	96	4
Nondoctorate	310	20	80
Economics	2,517	67	33
Recent	762	18	82
Senior	1,588	95	5
Nondoctorate	167	13	87

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-9. Full-time faculty in surveyed departments by tenure status, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Number of faculty	Tenured (percent)	Nontenured (percent)
Social sciences (continued)			
Political science	2,204	74	26
Recent*	565	16	84
Senior	1,576	97	3
Nondoctorate	63	22	78
Sociology	1,983	69	31
Recent	608	17	83
Senior	1,295	95	4
Nondoctorate	80	31	68
Psychology	3,373	73	27
Recent	910	15	85
Senior	2,420	96	4
Nondoctorate	43	22	78

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-10. Nontenured full-time faculty on tenure track in surveyed departments by doctoral status and field: Spring 1980

Field and doctoral status	Nontenured faculty (number)	Percent on tenure track
All fields	10,312	75
Recent*	7,270	84
Senior	2,174	66
Nondoctorate	868	26
Engineering	1,783	78
Recent	1,219	89
Senior	367	70
Nondoctorate	198	24
Chemical	277	83
Recent	198	91
Senior	62	77
Nondoctorate	18	17
Civil	501	75
Recent	326	86
Senior	95	75
Nondoctorate	80	33
Electrical	531	74
Recent	361	85
Senior	121	63
Nondoctorate	49	22
Mechanical	474	82
Recent	334	96
Senior	89	69
Nondoctorate	51	12
Physical sciences	1,592	74
Recent	1,071	81
Senior	460	65
Nondoctorate	61	20
Chemistry	695	73
Recent	489	82
Senior	172	58
Nondoctorate	34	21
Geology	304	84
Recent	229	92
Senior	65	61
Nondoctorate	10	36
Physics	593	70
Recent	353	72
Senior	223	72
Nondoctorate	17	6
Biological sciences	2,555	72
Recent	1,477	81
Senior	925	68
Nondoctorate	152	15
Biology	644	75
Recent	438	83
Senior	183	65
Nondoctorate	24	4
Botany	168	76
Recent	114	84
Senior	27	81
Nondoctorate	28	38
Zoology	281	76
Recent	192	89
Senior	43	83
Nondoctorate	45	12
Biochemistry	448	76
Recent	219	77
Senior	217	77
Nondoctorate	11	22
Microbiology	485	66
Recent	229	76
Senior	222	64
Nondoctorate	33	8
Physiology	529	68
Recent	285	75
Senior	233	63
Nondoctorate	11	9
Mathematical and computer sciences	1,457	67
Recent	1,131	77
Senior	144	63
Nondoctorate	181	9

Continued in the next column

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-10. Nontenured full-time faculty on tenure track in surveyed departments by doctoral status and field: Spring 1980 -- con.

Field and doctoral status	Nontenured faculty (number)	Percent on tenure track
Mathematical and computer sciences (continued)		
Mathematics	1,111	64
Recent*	869	73
Senior	116	64
Nondoctorate	126	5
Computer science	346	76
Recent	262	91
Senior	28	60
Nondoctorates	55	17
Social sciences	2,014	82
Recent	1,596	89
Senior	173	64
Nondoctorates	244	48
Economics	839	84
Recent	619	95
Senior	76	68
Nondoctorates	144	44
Political science	562	85
Recent	474	91
Senior	42	47
Nondoctorates	45	55
Sociology	613	77
Recent	503	81
Senior	55	73
Nondoctorates	55	53
Psychology	913	79
Recent	776	85
Senior	105	49
Nondoctorates	32	29

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-11. Full-time faculty in surveyed departments by academic rank, control of institution, doctoral status, and field: Spring 1980

Field and doctoral status	Control of institution											
	Public						Private					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	Instructor	Other		Professor	Associate professor	Assistant professor	Instructor	Other
All fields	29,233	52	27	20	2	3	10,527	51	22	24	2	1
Engineering	5,465	53	27	18	2	1	1,771	55	23	19	2	1
Chemical	769	59	19	19	2	1	270	57	19	22	1	19
Recent*	173	3	17	77	0	3	61	5	18	79	0	0
Senior	561	78	19	2	0	1	198	75	19	5	1	1
Nondoctorate	35	37	17	6	31	9	11	18	18	9	27	27
Civil	1,503	50	30	18	2	1	383	50	27	21	1	0
Recent	317	4	26	68	1	1	88	0	24	75	0	0
Senior	954	67	31	2	0	0	259	68	29	3	0	0
Nondoctorate	232	42	30	11	14	3	36	39	22	22	14	0
Electrical	1,715	53	28	17	2	1	598	57	22	18	2	2
Recent	294	2	18	77	2	1	111	0	14	83	1	2
Senior	1,286	67	30	3	0	0	443	72	23	2	0	2
Nondoctorate	135	37	29	16	16	2	44	41	27	7	25	2
Mechanical	1,478	53	26	18	2	1	520	54	24	18	2	2
Recent	281	5	16	79	0	0	99	2	13	81	3	2
Senior	982	70	27	2	0	0	350	73	25	2	0	1
Nondoctorate	217	37	34	11	13	4	71	38	35	13	11	4
Physical sciences	6,130	75	24	14	1	2	2,224	60	19	19	1	0
Chemistry	2,495	59	21	16	2	3	884	60	20	18	2	1
Recent	371	2	8	77	5	8	165	0	10	83	7	1
Senior	2,070	70	23	5	0	2	716	74	22	3	0	1
Nondoctorate	54	4	13	15	41	30	3	0	67	0	33	0
Geology	1,040	54	28	18	0	1	354	55	21	21	2	1
Recent	193	0	20	80	0	0	75	0	9	83	7	1
Senior	825	67	29	3	0	1	273	71	24	4	0	1
Nondoctorate	22	27	18	32	5	18	6	33	17	33	17	0
Physics	2,595	99	26	12	1	0	986	61	17	20	1	1
Recent	225	2	12	82	3	0	164	1	2	91	4	1
Senior	2,331	68	27	5	0	0	810	74	19	6	0	1
Nondoctorate	39	8	41	21	15	15	12	25	42	8	0	25

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-11. Full-time faculty in surveyed departments by academic rank, control of institution, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Control of institution											
	Public						Private					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	Instructor	Other		Professor	Associate professor	Assistant professor	Instructor	Other
Biological sciences	6,519	44	30	22	3	2	2,249	44	25	28	2	2
Biology	1,534	43	32	22	31	1	866	45	25	27	27	1
Recent*	275	1	7	82	7	3	194	0	7	86	3	5
Senior	1,219	53	38	8	0	0	661	58	31	10	0	0
Nondoctorate	40	3	15	13	63	5	11	9	9	27	55	9
Botany	798	47	29	21	2	3	34	76	18	6	0	0
Recent	162	8	17	69	1	6	2	0	100	0	0	0
Senior	586	61	33	6	0	0	32	81	13	6	0	0
Nondoctorate	50	6	10	42	26	20	0	0	0	0	0	0
Zoology	980	42	30	22	4	2	25	64	16	12	8	0
Recent	231	3	14	77	3	2	4	0	0	75	25	0
Senior	682	59	36	5	0	0	20	80	20	0	0	0
Nondoctorate	67	6	19	3	45	28	1	0	0	0	100	0
Biochemistry	1,178	46	30	20	2	2	498	48	24	23	1	3
Recent	155	1	10	76	6	5	86	0	0	93	6	2
Senior	1,005	54	33	11	0	1	411	59	30	9	0	3
Nondoctorate	18	0	17	28	39	11	1	0	0	0	100	0
Microbiology	1,019	43	29	24	3	2	395	42	21	32	3	3
Recent	184	3	11	79	5	3	67	0	5	88	4	4
Senior	804	54	33	12	0	0	316	52	25	20	0	2
Nondoctorate	31	0	6	13	42	39	12	0	8	25	42	25
Physiology	1,010	43	27	26	2	2	431	3	30	32	3	1
Recent	235	4	15	71	7	3	92	0	5	83	11	0
Senior	757	56	31	12	0	2	335	44	36	19	0	1
Nondoctorate	18	11	11	17	33	33	4	0	50	0	50	0

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-11. Full-time faculty in surveyed departments by academic rank, control of institution, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Control of institution											
	Public						Private					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other		Professor	Associate professor	Assistant professor	In-structor	Other
Mathematical and computer sciences	4,044	41	31	20	5	2	1,281	51	21	24	4	0
Mathematics	3,441	43	31	19	5	2	1,044	53	22	22	4	0
Recent *	733	1	14	70	11	2	255	0	13	75	11	1
Senior	2,505	58	38	4	0	0	746	72	25	3	0	0
Nondoctorate	203	4	16	15	52	13	43	23	23	33	21	2
Computer science	603	31	30	31	4	4	237	44	16	32	8	0
Recent	220	1	21	77	0	0	90	0	13	80	7	0
Senior	329	55	40	2	0	2	132	77	20	4	0	0
Nondoctorate	54	7	7	15	41	30	15	13	0	0	80	7
Social sciences	4,600	44	27	25	2	1	2,104	49	19	28	3	1
Economics	1,695	47	24	24	4	1	822	48	17	29	4	3
Recent	486	1	22	76	0	1	276	3	17	78	1	2
Senior	1,091	72	27	1	0	0	497	78	18	1	0	3
Nondoctorate	118	8	8	17	55	14	49	2	6	31	55	6
Political science	1,457	49	27	23	1	1	748	52	20	26	2	0
Recent	360	0	19	80	0	0	205	0	13	87	0	0
Senior	1,059	66	31	3	0	0	518	74	23	3	0	0
Nondoctorate	38	21	0	32	32	18	25	24	0	12	64	0
Sociology	1,448	37	31	29	2	1	534	48	21	28	2	1
Recent	446	2	17	79	1	1	162	4	12	82	0	2
Senior	941	56	39	5	0	0	353	69	26	4	0	0
Nondoctorate	61	7	13	28	41	11	19	32	5	5	53	5
Psychology	2,475	47	27	23	1	2	898	48	23	27	1	1
Recent	639	2	14	80	1	4	271	5	14	80	1	0
Senior	1,801	64	32	3	0	0	619	67	28	4	0	1
Nondoctorate	35	0	3	31	49	17	8	25	0	0	75	0

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation.

Table B-12. Full-time faculty in surveyed departments by tenure status, control of institution, doctoral status, and field: Spring 1980

Field and doctoral status	Public institutions			Private institutions		
	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)
All fields	29,234	76	24	10,527	69	31
Engineering	5,465	76	24	1,771	72	28
Chemical	769	75	25	270	70	30
Recent*	173	14	86	61	21	79
Senior	561	94	6	198	87	13
Nondoctorate	35	69	31	11	36	64
Civil	1,503	75	25	383	66	34
Recent	317	24	76	88	5	95
Senior	954	94	6	259	87	13
Nondoctorate	232	71	29	36	67	33
Electrical	1,715	78	22	598	74	26
Recent	294	13	87	111	5	95
Senior	1,286	93	7	443	92	8
Nondoctorate	135	75	25	44	67	35
Mechanical	1,478	77	23	520	75	25
Recent	281	13	87	99	9	91
Senior	982	93	7	350	93	7
Nondoctorate	217	83	17	71	80	20
Physical sciences	6,130	83	17	2,224	76	24
Chemistry	2,495	80	20	884	77	23
Recent	371	11	89	165	4	96
Senior	2,070	94	6	716	94	6
Nondoctorate	54	38	62	3	67	33
Geology	1,040	79	20	354	74	26
Recent	193	15	84	75	4	96
Senior	825	94	6	273	94	6
Nondoctorate	22	64	36	6	67	33
Physics	2,595	86	14	986	77	23
Recent	225	13	87	164	3	97
Senior	2,331	93	7	810	92	8
Nondoctorate	39	65	35	12	67	33
Biological sciences	6,519	73	27	2,249	64	36
Biology	1,534	76	24	866	68	32
Recent	275	7	93	194	6	94
Senior	1,219	92	8	661	86	13
Nondoctorate	40	60	38	11	27	73
Botany	798	79	21	34	94	6
Recent	162	30	70	2	100	0
Senior	586	96	4	32	94	6
Nondoctorate	50	46	56	0	0	0
Zoology	980	72	28	25	80	20
Recent	231	18	81	4	0	100
Senior	682	94	6	20	100	0
Nondoctorate	67	34	66	1	0	100

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-12. Full-time faculty in surveyed departments by tenure status, control of institution, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Public institutions			Private institutions		
	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)
Biological sciences (continued)						
Biochemistry	1,178	77	24	498	66	34
Recent*	155	14	86	86	0	100
Senior	1,005	87	13	411	80	20
Nondoctorate	18	44	56	1	0	100
Microbiology	1,019	70	30	395	55	45
Recent	184	11	89	67	1	97
Senior	804	85	15	316	68	32
Nondoctorate	31	29	71	12	8	92
Physiology	1,009	66	34	431	58	42
Recent	235	15	85	92	4	96
Senior	757	81	19	335	73	27
Nondoctorate	18	50	50	4	50	50
Mathematical and computer sciences	4,044	74	26	1,281	69	31
Mathematics	3,441	76	24	1,044	72	28
Recent	733	15	86	255	5	95
Senior	2,505	97	3	746	96	4
Nondoctorate	203	45	54	43	63	37
Computer science	603	60	40	237	55	45
Recent	220	19	81	90	8	92
Senior	329	94	6	132	92	8
Nondoctorate	54	20	78	15	13	87
Social sciences	4,600	72	28	2,104	65	35
Economics	1,695	69	31	822	61	39
Recent	486	23	77	276	11	89
Senior	1,091	96	4	497	94	6
Nondoctorate	118	15	85	49	10	92
Political science	1,457	77	23	748	68	31
Recent	360	22	78	205	5	94
Senior	1,059	98	2	518	97	3
Nondoctorate	38	24	76	25	27	73
Sociology	1,448	70	30	534	68	32
Recent	446	20	81	162	12	88
Senior	941	96	4	353	95	5
Nondoctorate	61	31	70	19	37	63
Psychology	2,475	74	26	898	70	30
Recent	639	15	85	271	15	85
Senior	1,801	96	4	619	95	5
Nondoctorate	35	23	77	8	14	86

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-13. Full-time faculty in surveyed departments by academic rank, Roose-Andersen department rating, and field: Spring 1980

Field	Roose-Andersen rating											
	Distinguished or strong						All others and not rated					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other		Professor	Associate professor	Assistant professor	In-structor	Other
All fields*	10,863	59	19	19	1	2	25,657	46	29	21	3	1
Engineering	2,188	61	20	17	1	1	5,048	50	28	18	2	1
Chemical	265	69	8	18	2	3	774	55	22	21	2	1
Civil	491	62	22	15	0	1	1,395	45	32	19	3	1
Electrical	863	59	21	17	1	2	1,450	51	30	17	2	0
Mechanical	569	61	21	17	0	1	1,429	51	27	18	3	1
Physical sciences	2,807	66	16	16	1	1	5,547	56	26	16	1	2
Chemistry	1,139	65	16	15	1	2	2,241	56	22	16	2	3
Geology	465	63	18	17	1	1	929	50	29	19	0	1
Physics	1,203	68	15	16	0	1	2,377	58	28	13	1	1
Biological sciences	1,986	52	24	21	1	3	4,382	40	30	25	3	2
Biology*	-	-	-	-	-	-	-	-	-	-	-	-
Botany	257	56	28	15	0	1	575	44	28	22	2	3
Zoology	239	57	22	18	2	1	766	38	32	22	5	3
Biochemistry	575	55	23	19	1	3	1,101	42	32	22	2	2
Microbiology	431	46	24	26	1	4	983	41	27	26	3	2
Physiology	484	48	23	24	2	3	957	36	30	30	3	1
Mathematical and computer sciences												
Mathematics	1,023	63	18	17	1	1	3,462	40	32	20	6	1
Computer science*	-	-	-	-	-	-	-	-	-	-	-	-
Social sciences	1,718	56	16	25	2	1	4,986	43	28	26	3	2
Economics	562	55	12	28	2	2	1,954	45	25	25	4	1
Political science	719	59	17	23	2	0	1,486	45	28	25	1	1
Sociology	437	52	20	26	1	1	1,546	37	31	29	2	1
Psychology	1,141	53	21	23	1	1	2,232	44	29	25	1	1

*Biology and computer science departments were not rated in the Roose-Andersen survey.

Source: National Science Foundation

Table B-14. Full-time faculty in surveyed departments by tenure status, Roose-Andersen department rating, and field: Spring 1980

Field	Roose-Andersen rating					
	Distinguished or strong			All others and not rated		
	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)
All fields*	10,863	76	24	25,657	74	26
Engineering	2,188	79	21	5,048	74	26
Chemical	265	76	24	774	72	27
Civil	491	80	20	1,395	71	29
Electrical	863	77	23	1,450	77	23
Mechanical	569	82	18	1,429	75	25
Physical sciences	2,807	80	20	5,547	81	19
Chemistry	1,139	79	21	2,241	80	20
Geology	465	80	21	929	78	22
Physics	1,203	82	18	2,377	84	16
Biological sciences	1,986	72	28	4,382	69	31
Biology*	-	-	-	-	-	-
Botany	257	85	33	575	77	23
Zoology	239	78	22	766	70	30
Biochemistry	575	73	28	1,101	74	26
Microbiology	431	69	32	983	65	35
Physiology	484	64	36	957	63	37
Mathematical and computer sciences						
Mathematics	1,023	80	20	3,462	74	26
Computer science*	-	-	-	-	-	-
Social sciences	1,718	70	30	4,986	70	30
Economics	562	65	34	1,954	67	33
Political science	719	74	26	1,486	74	26
Sociology	437	70	30	1,546	69	31
Psychology	1,141	75	25	2,232	72	28

*Biology and computer science departments were not rated in the Roose-Andersen survey.

Source: National Science Foundation

Table B-15. Full-time faculty in surveyed departments by academic rank, level of total Federal R&D obligations to institution, doctoral status, and field:

Field and doctoral status	R & D funding level											
	First 50 institutions*						Second 50 institutions					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other		Professor	Associate professor	Assistant professor	In-structor	Other
All fields	17,917	53	23	20	2	2	10,784	46	27	22	3	1
Engineering	3,343	56	24	17	2	1	1,802	51	26	21	2	1
Chemical	427	61	16	18	0	2	275	53	22	21	4	1
Recent**	91	4	12	81	0	3	67	3	19	76	0	1
Senior	320	78	17	3	0	2	189	75	23	3	1	0
Nondoctorate	16	47	20	7	0	27	19	16	21	11	47	5
Civil	853	54	26	17	2	1	509	53	26	20	1	0
Recent	166	0	22	76	2	1	112	1	24	75	0	0
Senior	574	71	27	2	0	1	333	71	26	3	0	0
Nondoctorate	113	49	27	7	15	3	64	50	28	11	11	0
Electrical	1,134	55	26	16	2	1	569	50	28	21	0	1
Recent	175	1	14	84	1	0	130	2	22	74	0	1
Senior	887	68	28	3	0	1	403	66	30	3	0	0
Nondoctorate	72	33	26	10	22	4	36	31	31	26	6	3
Mechanical	929	55	24	18	2	1	449	50	25	21	3	1
Recent	180	4	11	83	1	1	97	0	21	79	0	0
Senior	636	72	27	1	0	0	286	70	26	5	0	0
Nondoctorate	113	44	33	10	12	3	66	35	29	9	18	9
Physical sciences	3,677	65	19	15	1	1	2,245	54	25	18	1	2
Chemistry	1,319	64	18	15	1	2	997	55	21	17	2	5
Recent	207	4	11	82	1	2	149	0	5	76	7	11
Senior	1,096	77	19	3	1	1	826	66	25	6	0	3
Nondoctorate	16	0	6	0	50	44	22	5	5	18	41	32
Geology	671	58	24	16	1	1	327	53	27	20	0	1
Recent	110	0	12	85	4	0	76	0	26	74	0	0
Senior	553	70	26	3	0	1	245	70	27	3	0	0
Nondoctorate	8	25	25	25	13	13	6	17	0	67	0	17
Physics	1,687	67	18	20	1	0	921	54	29	17	0	0
Recent	165	2	7	86	4	1	118	1	13	86	0	0
Senior	1,506	75	19	6	0	0	791	62	31	6	0	0
Nondoctorate	16	20	47	7	13	20	12	8	8	42	8	33

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*In total Federal obligations to institutions for research and development activities, FY 1977.
**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-15. Full-time faculty in surveyed departments by academic rank, level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	R & D funding level					
	Remaining institutions*					
	Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other
All fields	11,059	46	29	21	3	1
Engineering	2,091	52	28	16	2	1
Chemical	337	60	19	19	1	1
Recent**	76	3	21	75	0	1
Senior	250	78	19	3	0	0
Nondoctorate	11	36	9	0	45	9
Civil	524	40	37	20	3	1
Recent	127	9	34	57	0	1
Senior	306	56	40	4	0	0
Nondoctorate	91	27	32	20	15	5
Electrical	610	56	26	15	3	0
Recent	99	1	18	17	4	3
Senior	439	71	27	2	0	0
Nondoctorate	72	40	28	13	19	0
Mechanical	620	55	28	14	2	1
Recent	102	8	20	69	2	0
Senior	409	70	27	2	0	1
Nondoctorate	109	38	41	8	10	3
Physical sciences	2,432	56	26	16	2	1
Chemistry	1,064	56	23	17	2	2
Recent	180	0	9	78	8	5
Senior	864	69	25	4	0	1
Nondoctorate	20	5	35	20	30	15
Geology	396	49	29	21	1	1
Recent	82	1	16	83	1	0
Senior	300	63	33	4	0	1
Nondoctorate	14	36	21	29	7	7
Physics	972	57	29	12	1	1
Recent	105	1	5	85	7	1
Senior	844	65	31	3	0	1
Nondoctorate	23	9	50	14	14	22

*In total Federal obligations to institutions for research and development activities, FY 1977.
**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-15. Full-time faculty in surveyed departments by academic rank, level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	R & D funding level											
	First 50 institutions*						Second 50 institutions					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other		Professor	Associate professor	Assistant professor	In-structor	Other
Biological sciences	3,842	47	26	22	2	3	2,389	41	30	25	3	2
Biology	854	45	29	22	3	0	676	41	29	25	4	2
Recent**	150	0	5	88	7	0	152	0	7	79	8	6
Senior	686	57	34	8	1	0	507	54	36	9	0	1
Nondoctorate	18	0	6	17	67	11	17	6	12	12	65	6
Botany	390	51	28	17	2	3	163	48	32	17	1	2
Recent	63	3	16	71	0	10	30	0	23	63	3	10
Senior	313	62	31	6	0	1	130	60	35	6	0	0
Nondoctorate	14	7	7	33	40	13	3	0	0	0	67	33
Zoology	365	51	24	18	4	3	208	37	33	24	5	1
Recent	68	3	14	74	7	0	70	9	19	66	4	3
Senior	281	66	27	5	1	1	129	55	42	3	0	0
Nondoctorate	16	0	0	0	53	41	9	0	22	0	78	0
Biochemistry	845	52	25	18	1	3	466	38	31	26	3	2
Recent	112	0	8	84	4	4	67	3	0	82	9	4
Senior	731	61	28	8	0	3	388	46	36	16	0	1
Nondoctorate	2	0	0	0	50	50	11	0	18	18	55	0
Microbiology	700	42	24	29	2	3	446	42	28	25	3	1
Recent	113	4	4	86	2	6	84	1	11	81	6	1
Senior	562	51	29	18	1	1	353	53	33	11	1	1
Nondoctorate	25	0	8	13	33	50	9	0	0	33	56	11
Physiology	688	44	26	24	3	3	430	40	28	29	1	1
Recent	107	0	3	80	14	3	113	8	17	71	1	4
Senior	569	53	31	13	0	2	307	53	32	14	2	0
Nondoctorate	12	0	8	17	25	50	10	20	30	20	50	0

*In total Federal obligations to institutions for research and development activities, FY 1977.
**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-15. Full-time faculty in surveyed departments by academic rank, level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	R & D funding level					
	Remaining institutions *					
	Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	Instructor	Other
Biological sciences	2,537	41	31	24	2	1
Biology	870	43	31	23	1	1
Recent **	167	1	10	83	1	5
Senior	687	54	36	9	0	0
Nondoctorate	16	6	25	13	50	0
Botany	279	44	27	26	2	3
Recent	71	15	18	66	0	0
Senior	175	62	33	5	0	0
Nondoctorate	33	6	12	48	15	21
Zoology	432	38	32	23	3	3
Recent	97	0	9	87	0	4
Senior	292	54	41	5	0	0
Nondoctorate	43	9	26	5	35	26
Biochemistry	365	43	33	21	2	1
Recent	62	0	13	77	6	3
Senior	297	53	38	9	0	0
Nondoctorate	6	0	17	50	17	17
Microbiology	268	46	28	21	4	1
Recent	54	0	10	80	12	0
Senior	205	60	33	7	0	0
Nondoctorate	9	0	11	11	56	22
Physiology	323	32	31	34	3	0
Recent	107	0	18	72	10	0
Senior	216	47	37	16	0	0
Nondoctorate	0	0	0	0	0	0

*In total Federal obligations to institutions for research and development activities, FY 1977.

**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-15. Full-time faculty in surveyed departments by academic rank, level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	R & D funding level											
	First 50 institutions*						Second 50 institutions					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other		Professor	Associate professor	Assistant professor	In-structor	Other
Mathematical and computer sciences	2,422	50	25	21	3	2	1,397	36	32	22	10	1
Mathematics	1,868	54	25	17	2	1	1,229	37	32	20	10	1
Recent**	360	1	10	77	9	4	309	0	19	68	13	1
Senior	1,475	68	29	3	0	0	814	55	40	5	0	0
Nondoctorate	33	12	9	27	36	18	106	3	9	2	75	10
Computer science	554	36	26	31	4	3	168	27	28	33	10	2
Recent	206	1	19	78	2	0	70	0	21	76	3	0
Senior	306	63	33	2	0	2	79	57	41	1	0	0
Nondoctorate	42	12	2	17	40	26	19	5	0	5	74	16
Social sciences	3,097	50	21	25	3	1	2,010	44	27	27	1	1
Economics	1,165	52	17	26	4	2	765	45	26	24	2	3
Recent	358	3	17	78	1	2	221	1	21	77	0	0
Senior	747	79	18	1	0	2	493	69	30	1	0	1
Nondoctorate	60	12	3	20	65	0	51	2	10	25	27	35
Political science	1,066	52	23	23	2	1	576	49	24	26	1	0
Recent	272	0	18	81	0	0	145	0	8	92	0	0
Senior	756	72	26	2	0	0	417	67	30	3	0	0
Nondoctorate	38	21	0	16	47	18	14	29	0	50	21	0
Sociology	866	43	26	27	2	1	669	39	29	30	2	0
Recent	256	4	13	81	0	2	214	0	19	80	0	0
Senior	575	62	34	4	0	0	433	60	35	5	0	0
Nondoctorate	35	20	0	17	54	9	22	5	19	19	48	14
Psychology	1,536	49	25	23	1	2	941	49	26	23	0	1
Recent	422	3	15	77	0	5	229	0	13	84	0	2
Senior	1,093	68	30	2	0	0	704	65	31	4	0	1
Nondoctorate	21	5	0	29	48	24	8	13	0	25	50	0

*In total Federal obligations to institutions for research and development activities, FY 1977.
**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-15. Full-time faculty in surveyed departments by academic rank, level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	R & D funding level					
	Remaining institutions*					
	Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other
Mathematical and computer sciences	1,506	41	32	22	4	2
Mathematics	1,388	41	32	21	5	1
Recent **	319	2	14	69	13	2
Senior	962	57	38	4	0	0
Nondoctorate	107	11	28	30	21	9
Computer science	118	39	29	28	2	3
Recent	34	0	18	82	0	0
Senior	76	61	33	7	0	0
Nondoctorate	8	0	38	0	25	50
Social sciences	1,597	42	28	26	3	0
Economics	586	41	26	26	6	0
Recent	183	0	27	73	0	1
Senior	347	69	29	2	0	0
Nondoctorate	56	4	11	18	68	0
Political science	564	46	29	24	2	0
Recent	148	0	22	77	1	0
Senior	404	63	32	4	0	0
Nondoctorate	12	17	0	17	67	0
Sociology	447	37	30	30	2	1
Recent	138	3	16	78	2	1
Senior	286	54	38	8	0	0
Nondoctorate	23	5	21	26	26	16
Psychology	896	43	28	27	2	0
Recent	259	4	13	80	3	0
Senior	623	60	34	6	0	0
Nondoctorate	14	0	7	21	64	7

*In total Federal obligations to institutions for research and development activities, FY 1977.

** Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-16. Full-time faculty in surveyed departments by tenure status, level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980

Field and doctoral status	R & D funding level								
	First 50 institutions *			Second 50 institutions			Remaining institutions		
	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)
All fields	17,917	75	25	10,784	72	28	11,059	74	26
Engineering	3,343	78	22	1,802	71	29	2,091	76	24
Chemical	427	75	25	275	72	28	337	72	28
Recent**	91	13	87	67	22	78	76	13	87
Senior	320	93	7	189	89	11	250	92	8
Nondoctorate	16	73	33	19	74	26	11	27	73
Civil	853	77	23	509	70	30	524	71	29
Recent	166	16	84	112	11	89	127	31	68
Senior	574	95	5	333	89	11	306	91	9
Nondoctorate	113	75	25	64	77	23	91	60	40
Electrical	1,134	79	21	569	74	26	610	77	24
Recent	175	7	93	130	13	86	99	15	86
Senior	887	94	6	403	92	8	439	92	8
Nondoctorate	72	69	30	36	86	14	72	68	32
Mechanical	929	78	22	449	70	30	620	80	20
Recent	181	10	90	97	10	90	102	19	81
Senior	635	96	4	286	90	10	409	93	7
Nondoctorate	112	87	14	66	71	29	109	87	13
Physical sciences	3,677	82	18	2,245	79	21	2,432	81	20
Chemistry	1,319	81	19	997	78	22	1,064	79	21
Recent	207	13	87	149	7	93	180	6	94
Senior	1,096	95	5	826	91	8	864	95	5
Nondoctorate	16	6	94	22	55	45	20	53	47
Geology	671	81	20	327	78	22	396	75	26
Recent	110	5	95	76	25	75	82	10	90
Senior	552	96	4	245	93	7	300	93	7
Nondoctorate	8	63	38	6	83	17	14	57	43
Physics	1,687	84	16	921	81	19	972	85	15
Recent	165	7	93	118	11	89	105	9	91
Senior	1,506	92	8	791	92	8	844	94	6
Nondoctorate	16	69	31	12	45	55	23	73	27

* In total Federal obligations to institutions for research and development activities, FY 1977.

** Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-16. Full-time faculty in surveyed departments by tenure status, level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	R & D funding level								
	First 50 institutions *			Second 50 institutions			Remaining institutions		
	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)
Biological sciences	3,842	71	29	2,389	71	29	2,537	72	28
Biology	854	74	27	676	70	30	870	75	25
Recent**	150	3	98	152	8	92	167	10	90
Senior	686	90	10	507	89	11	687	92	8
Nondoctorate	18	56	50	17	53	47	16	50	44
Botany	390	82	18	163	80	20	279	77	23
Recent	63	23	79	30	23	77	71	42	59
Senior	313	96	4	130	95	5	175	97	3
Nondoctorate	14	47	53	3	0	100	33	48	52
Zoology	365	76	24	208	71	29	432	69	31
Recent	68	17	83	70	23	77	97	15	85
Senior	281	93	7	129	100	0	292	92	8
Nondoctorate	16	35	59	9	22	78	43	35	65
Biochemistry	845	73	27	466	74	26	365	74	26
Recent	112	5	95	67	16	84	62	6	94
Senior	731	83	17	388	84	16	297	89	11
Nondoctorate	2	0	100	11	55	45	6	50	67
Microbiology	670	62	38	446	69	31	268	72	28
Recent	113	7	94	84	10	92	54	10	90
Senior	562	75	25	353	85	15	205	88	12
Nondoctorate	25	25	75	9	0	100	9	44	56
Physiology	688	64	36	430	66	33	323	59	42
Recent	107	2	98	113	23	77	107	12	89
Senior	569	76	24	307	82	17	216	81	19
Nondoctorate	12	42	58	10	60	40	0	0	0

**Faculty who have held doctorates 7 years or less.

Source: National Science Foundation

Table B-16. Full-time faculty in surveyed departments by tenure status, level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	R & D funding level								
	First 50 institutions *			Second 50 institutions			Remaining institutions		
	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)
Mathematical and computer sciences	2,422	75	25	1,397	68	32	1,506	73	27
Mathematics	1,868	80	20	1,229	70	30	1,388	74	26
Recent **	360	8	92	309	16	84	319	13	87
Senior	1,475	97	3	814	97	3	962	95	5
Nondoctorate	33	73	24	106	23	78	107	66	34
Computer science	554	60	40	168	54	47	118	64	36
Recent	206	15	85	70	21	83	34	21	82
Senior	306	95	5	79	97	4	76	88	13
Nondoctorate	42	24	76	19	5	95	8	38	63
Social sciences	3,097	70	30	2,010	69	32	1,597	71	29
Economics	1,165	67	33	765	68	32	586	65	35
Recent	358	14	86	221	23	77	183	22	79
Senior	747	97	3	493	93	7	347	95	5
Nondoctorate	60	12	88	51	14	84	56	14	86
Political science	1,066	74	26	576	72	28	564	77	23
Recent	272	15	85	145	7	93	148	28	72
Senior	756	98	2	417	97	7	404	96	4
Nondoctorate	38	21	79	14	40	70	12	25	75
Sociology	866	70	30	669	67	33	447	72	28
Recent	256	14	86	214	18	82	138	23	77
Senior	575	97	3	433	93	7	286	99	1
Nondoctorate	35	34	66	22	24	76	23	26	68
Psychology	1,536	74	26	941	74	26	896	70	30
Recent	422	17	83	229	10	90	259	15	84
Senior	1,093	97	3	704	95	5	623	94	6
Nondoctorate	21	29	76	8	29	57	14	7	86

*Full-and part-time.

**Faculty who have held doctorates 7 years or less.

Source: National Science Foundation

Table B-17. Full-time faculty in surveyed departments by academic rank, graduate enrollment, doctoral status, and field: Spring 1980

Field and doctoral status	Graduate enrollment*											
	Fewer than 30 students						30-49 students					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other		Professor	Associate professor	Assistant professor	In-structor	Other
All fields	7,633	44	28	24	3	2	8,001	47	28	21	3	1
Engineering	775	53	26	18	1	2	1,049	55	23	19	2	0
Chemical	177	53	24	20	1	2	318	58	19	20	1	1
Recent**	42	7	17	76	0	0	66	0	20	79	0	2
Senior	126	70	27	2	0	0	238	76	18	5	0	0
Nondoctorate	9	22	11	11	22	33	14	36	29	7	14	7
Civil	163	49	34	16	1	1	204	52	24	20	3	0
Recent	38	26	34	42	0	0	43	0	16	81	0	0
Senior	98	64	35	1	0	0	132	69	27	3	0	1
Nondoctorate	27	26	30	33	7	7	29	52	21	7	21	0
Electrical	164	59	24	16	1	1	279	50	27	18	4	0
Recent	21	5	0	90	0	5	52	0	21	79	0	0
Senior	124	70	26	4	0	0	198	68	28	4	0	0
Nondoctorate	19	42	37	11	11	0	29	21	31	7	41	0
Mechanical	271	53	24	18	2	3	248	57	24	17	2	0
Recent	50	0	20	70	6	4	47	4	15	81	0	0
Senior	177	72	22	3	1	2	176	76	23	1	0	0
Nondoctorate	44	36	36	18	2	7	25	28	48	8	20	0
Physical sciences	1,098	51	29	17	2	1	1,659	55	26	16	1	1
Chemistry	235	49	29	21	1	0	446	55	23	15	3	4
Recent	43	0	9	88	2	0	69	0	7	74	12	7
Senior	187	62	32	6	1	0	364	67	26	3	1	27
Nondoctorate	5	0	80	0	20	0	13	8	15	23	23	31
Geology	161	45	32	18	2	1	319	51	25	22	1	1
Recent	33	0	18	76	6	0	65	0	8	88	5	0
Senior	122	59	37	2	0	1	248	65	29	5	0	0
Nondoctorate	6	0	17	17	33	17	6	33	17	17	0	17
Physics	702	54	28	15	1	1	894	56	29	15	0	0
Recent	85	1	7	84	6	1	111	3	9	87	2	0
Senior	601	62	31	5	0	1	772	64	31	5	0	0
Nondoctorate	16	0	38	13	31	13	11	18	64	0	0	9

*Full- and part-time.
**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-17. Full-time faculty in surveyed departments by academic rank, graduate enrollment, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Graduate enrollment*											
	50-89 students						90 or more students					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other		Professor	Associate professor	Assistant professor	In-structor	Other
All fields	10,723	50	26	21	2	1	13,403	54	23	19	2	2
Engineering	1,937	49	27	20	3	1	3,475	55	26	17	1	1
Chemical	305	55	19	22	30	23	239	68	13	17	1	1
Recent**	76	4	12	83	0	1	50	4	22	70	0	6
Senior	212	75	21	1	0	2	183	85	11	3	1	0
Nondoctorate	17	24	18	6	47	12	6	67	0	0	33	0
Civil	509	43	31	21	4	1	1,010	52	28	170	1	1
Recent	107	1	19	79	0	2	217	0	30	68	1	0
Senior	320	62	35	2	0	1	663	69	28	3	0	0
Nondoctorate	82	26	33	17	23	2	130	52	28	6	8	4
Electrical	410	53	27	19	1	1	1,460	55	27	16	1	2
Recent	77	1	13	81	1	4	255	1	19	78	2	0
Senior	303	68	30	2	0	0	1,104	68	28	3	0	1
Nondoctorate	30	30	27	33	13	0	101	45	27	10	15	4
Mechanical	713	48	28	20	3	1	766	57	24	17	1	1
Recent	148	5	18	76	0	0	134	4	11	85	0	0
Senior	441	67	31	3	0	0	537	72	26	2	0	1
Nondoctorate	124	30	32	13	19	6	95	51	34	7	8	2
Physical sciences	2,670	60	23	15	1	1	2,927	64	18	15	1	2
Chemistry	1,027	59	21	17	2	1	1,672	62	18	15	2	4
Recent	161	6	9	80	4	1	263	0	9	78	5	8
Senior	849	70	24	5	0	1	1,387	74	20	3	0	2
Nondoctorate	17	0	6	24	47	24	22	4	9	4	43	39
Geology	670	57	25	17	0	1	244	56	25	18	0	1
Recent	125	0	21	79	0	0	45	0	18	78	0	2
Senior	535	71	26	2	0	1	193	70	26	3	0	1
Nondoctorate	10	40	10	50	0	10	6	33	17	33	0	0
Physics	973	64	23	12	1	1	1,011	69	16	15	0	0
Recent	96	0	13	80	5	2	96	1	3	93	3	0
Senior	861	72	25	3	0	0	907	77	17	7	0	0
Nondoctorate	16	13	19	44	6	13	8	25	50	0	0	38

*Full- and part-time.
**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-17. Full-time faculty in surveyed departments by academic rank, graduate enrollment, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Graduate enrollment*											
	Fewer than 30 students						30-49 students					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other		Professor	Associate professor	Assistant professor	In-structor	Other
Biological sciences	3,683	41	29	26	2	2	2,096	44	29	22	3	2
Biology	380	35	34	28	3	1	544	40	30	26	3	1
Recent **	86	0	7	90	2	1	125	1	9	82	4	5
Senior	282	47	44	9	0	0	405	54	37	9	1	0
Nondoctorate	12	0	8	17	58	17	14	0	14	29	43	7
Botany	347	41	29	25	2	3	244	50	33	14	0	2
Recent	85	13	21	61	0	5	43	2	19	67	2	9
Senior	227	58	35	7	0	0	198	62	36	2	0	1
Nondoctorate	35	6	11	51	17	17	3	0	33	33	0	33
Zoology	126	37	33	22	3	6	241	45	31	14	5	4
Recent	35	0	14	74	0	11	56	7	20	54	9	4
Senior	73	60	37	3	0	0	172	60	36	2	1	1
Nondoctorate	18	11	50	0	22	22	13	0	15	0	38	46
Biochemistry	1,039	43	30	23	2	2	395	48	27	20	1	3
Recent	164	0	7	81	7	5	60	3	5	83	5	3
Senior	863	52	34	12	0	2	329	57	31	9	0	3
Nondoctorate	12	0	17	25	50	8	6	0	0	33	33	17
Microbiology	684	43	28	25	3	1	400	40	25	28	3	4
Recent	107	0	12	79	7	2	94	5	5	78	4	7
Senior	558	53	31	15	1	1	295	53	20	11	0	0
Nondoctorate	19	0	16	21	53	11	11	0	0	9	45	36
Physiology	1,107	39	27	29	2	2	272	43	30	24	3	1
Recent	268	3	11	75	7	3	50	0	22	68	12	0
Senior	822	51	33	15	0	1	218	54	32	14	0	1
Nondoctorate	17	12	12	12	35	35	4	0	25	50	50	0

*Full- and part-time.
**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-17. Full-time faculty in surveyed departments by academic rank, graduate enrollment, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Graduate enrollment*											
	50-89 students						90 or more students					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	Instructor	Other		Professor	Associate professor	Assistant professor	Instructor	Other
Biological sciences	1,784	46	27	23	2	2	1,205	49	27	20	3	1
Biology	605	43	32	23	2	1	871	50	26	20	3	1
Recent**	111	1	6	83	4	7	147	0	6	82	10	2
Senior	483	53	37	10	0	0	710	61	30	8	0	1
Nondoctorate	11	9	27	18	55	0	14	7	7	0	86	0
Botany	231	55	21	19	3	2	10	30	40	30	0	0
Recent	33	3	12	82	0	3	3	0	0	100	0	0
Senior	186	68	24	8	0	1	7	43	57	0	0	0
Nondoctorate	12	8	0	8	58	25	0	0	0	0	0	0
Zoology	512	43	27	25	4	2	126	40	31	21	6	2
Recent	115	0	7	91	3	0	29	0	28	69	3	0
Senior	368	59	35	5	0	0	89	56	35	8	0	1
Nondoctorate	29	7	7	7	55	28	8	0	0	0	88	13
Biochemistry	165	59	25	14	0	2	77	55	25	20	0	0
Recent	9	0	0	100	0	0	8	0	29	71	0	0
Senior	155	63	26	9	0	2	69	61	25	14	0	0
Nondoctorate	1	0	100	0	0	0	0	0	0	0	0	0
Microbiology	245	43	24	28	1	4	85	52	26	22	0	0
Recent	35	0	0	97	3	0	15	0	20	80	0	0
Senior	197	53	29	17	0	1	70	63	27	10	0	0
Nondoctorate	13	0	8	18	15	69	0	0	0	0	0	0
Physiology	26	38	35	27	0	0	36	47	31	17	3	3
Recent	4	0	0	100	0	0	5	0	0	80	20	0
Senior	22	45	41	14	0	0	30	57	33	7	0	3
Nondoctorate	0	0	0	0	0	0	1	0	100	0	0	0

*Full- and part-time

**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-17. Full-time faculty in surveyed departments by academic rank, graduate enrollment, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Graduate enrollment*											
	Fewer than 30 students						30-49 students					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other		Professor	Associate professor	Assistant professor	In-structor	Other
Mathematical and computer sciences	950	40	26	24	8	1	1,564	44	30	19	5	2
Mathematics	904	41	27	24	7	1	1,476	45	30	18	5	2
Recent **	256	0	11	71	16	1	339	3	17	65	13	2
Senior	588	62	34	4	0	0	1,076	60	35	4	0	0
Nondoctorate	60	15	28	10	40	8	61	5	7	15	54	21
Computer science	46	13	15	39	24	9	88	36	27	27	2	6
Recent	22	0	18	77	5	0	30	0	13	77	7	0
Senior	11	55	27	9	0	0	55	58	36	2	0	4
Nondoctorate	13	0	0	0	77	31	3	0	0	0	0	100
Social sciences	892	41	29	30	2	0	1,354	38	28	29	3	1
Economics	227	41	29	30	3	1	314	41	21	26	5	0
Recent	80	0	28	73	0	0	107	0	25	74	0	0
Senior	131	69	29	2	0	2	187	70	30	1	0	0
Nondoctorate	16	0	19	38	44	0	20	0	15	10	80	0
Political science	309	46	23	30	1	0	367	40	32	25	3	1
Recent	104	1	21	78	0	0	105	0	17	83	0	0
Senior	195	71	26	4	0	0	246	59	40	2	0	0
Nondoctorate	10	40	0	30	30	0	16	25	0	0	63	13
Sociology	356	35	33	29	2	0	673	36	27	33	3	1
Recent	101	1	19	78	1	0	240	2	17	80	0	0
Senior	237	53	40	7	0	0	393	59	35	6	0	0
Nondoctorate	18	0	28	39	33	0	40	10	5	20	53	10
Psychology	235	46	21	31	1	1	279	49	24	26	1	0
Recent	83	11	10	77	2	0	71	0	18	82	0	0
Senior	152	66	27	7	0	1	205	66	26	7	0	0
Nondoctorate	0	0	0	0	0	0	3	33	0	0	66	0

*Full- and part-time.

**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-17. Full-time faculty in surveyed departments by academic rank, graduate enrollment, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Graduate enrollment*											
	50-89 students						90 or more students					
	Number of faculty	Academic rank (percent)					Number of faculty	Academic rank (percent)				
		Professor	Associate professor	Assistant professor	In-structor	Other		Professor	Associate professor	Assistant professor	In-structor	Other
Mathematical and computer sciences	1,391	42	31	21	6	0	1,420	46	27	22	2	3
Mathematics	1,135	61	30	19	6	0	970	51	29	17	2	2
Recent **	208	0	11	82	8	0	185	1	15	71	6	8
Senior	837	59	37	4	0	0	750	65	32	3	0	0
Nondoctorate	90	4	17	20	54	4	35	9	21	30	24	15
Computer science	256	35	32	27	5	1	450	37	24	33	3	3
Recent	90	2	24	69	3	1	168	0	18	82	0	0
Senior	147	56	39	5	0	0	248	65	32	1	0	2
Nondoctorate	19	21	21	0	53	5	34	9	0	24	41	26
Social sciences	2,167	46	25	26	2	0	2,291	53	21	23	2	2
Economics	904	46	23	27	4	0	1,072	52	18	23	3	3
Recent	277	1	18	81	0	0	298	3	19	74	1	2
Senior	571	72	27	1	0	0	699	78	19	1	0	2
Nondoctorate	56	4	5	25	64	5	75	11	5	19	45	22
Political science	738	50	25	24	1	0	790	55	21	22	1	1
Recent	182	0	18	81	1	0	174	0	13	87	0	0
Senior	541	67	29	4	0	0	594	73	24	3	0	0
Nondoctorate	15	20	0	47	33	0	22	13	0	22	48	22
Sociology	525	42	29	26	1	1	429	48	25	25	1	1
Recent	157	1	17	78	1	3	110	6	7	84	1	1
Senior	357	61	35	4	0	0	308	64	32	4	0	0
Nondoctorate	11	27	0	9	45	9	11	27	9	9	27	27
Psychology	774	45	27	26	1	1	2,085	48	27	23	1	2
Recent	244	6	14	77	2	2	512	0	14	82	0	4
Senior	523	64	33	2	0	0	1,540	65	32	3	0	0
Nondoctorate	7	0	14	14	57	14	33	3	0	30	52	15

*Full- and part-time.
**Faculty who have held doctorates seven years or less.

Source: National Science Foundation.

Table B-18. Full-time faculty in surveyed departments by tenure status, graduate enrollment, doctoral status, and field: Spring 1980

Field and doctoral status	Graduate enrollment*											
	Fewer than 30 students			30 - 49 students			50 - 89 students			90 or more students		
	Number of faculty	Tenured (percent)	Nontenured (percent)	Number of faculty	Tenured (percent)	Nontenured (percent)	Number of faculty	Tenured (percent)	Nontenured (percent)	Number of faculty	Tenured (percent)	Nontenured (percent)
All fields	7,633	70	30	8,001	74	26	10,723	75	25	13,403	76	24
Engineering	775	75	25	1,049	74	26	1,936	73	27	3,475	77	23
Chemical	177	67	33	318	74	26	305	73	27	239	77	23
Recent**	42	29	71	66	11	89	76	12	88	50	16	84
Senior	126	82	18	238	92	8	212	96	4	183	95	5
Nondoctorate	9	33	67	14	71	29	17	71	29	6	50	50
Civil	163	77	24	204	72	28	509	70	30	1,010	75	25
Recent	38	55	45	43	7	93	107	17	84	217	18	82
Senior	98	95	5	132	92	8	320	91	9	663	92	8
Nondoctorate	27	41	59	29	76	24	82	59	41	130	82	18
Electrical	164	80	20	279	73	27	409	78	22	1,460	77	23
Recent	21	5	95	52	13	87	77	14	86	254	9	91
Senior	124	94	6	198	91	8	303	93	7	1,104	93	7
Nondoctorate	19	79	21	29	55	45	29	83	17	101	73	26
Mechanical	271	76	24	248	77	24	713	73	27	766	79	21
Recent	50	6	94	47	15	85	148	16	84	134	10	90
Senior	177	93	7	176	93	7	441	91	9	537	95	5
Nondoctorate	44	86	11	25	76	28	124	79	21	95	86	15
Physical sciences	1,098	80	20	1,659	80	20	2,671	82	18	2,927	80	19
Chemistry	235	77	23	446	77	22	1,027	81	19	1,672	79	21
Recent	43	0	100	69	6	94	161	16	83	263	6	94
Senior	187	95	5	364	92	7	849	94	6	1,387	94	6
Nondoctorate	5	80	20	13	38	62	17	50	50	22	29	75
Geology	161	78	22	319	75	25	671	80	20	244	77	21
Recent	33	15	85	65	5	95	118	17	83	45	9	89
Senior	122	97	3	248	94	6	543	94	6	193	94	5
Nondoctorate	6	33	67	6	83	17	10	80	30	6	50	33
Physics	702	81	19	894	83	17	973	85	15	1,011	83	17
Recent	85	12	88	109	10	90	96	9	91	96	3	97
Senior	601	92	8	775	94	6	861	94	6	907	92	8
Nondoctorate	16	50	50	10	80	10	16	69	25	8	63	38

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* Full- and part-time.

**Faculty who have held doctorates seven years or less.

Source: National Science Foundation.

Table B-18. Full-time faculty in surveyed departments by tenure status, graduate enrollment, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Graduate enrollment *											
	Fewer than 30 students			30 - 49 students			50 - 89 students			90 or more students		
	Number of faculty	Tenured (percent)	Nontenured (percent)	Number of faculty	Tenured (percent)	Nontenured (percent)	Number of faculty	Tenured (percent)	Nontenured (percent)	Number of faculty	Tenured (percent)	Nontenured (percent)
Biological sciences	3,683	69	31	2,096	72	28	1,784	72	28	1,205	74	26
Biology	380	75	25	544	71	29	605	72	28	871	74	26
Recent **	86	10	90	125	8	93	111	3	97	147	6	94
Senior	282	95	5	405	92	8	483	88	12	710	89	11
Nondoctorate	12	75	25	14	36	64	11	55	55	14	57	43
Botany	347	79	21	244	84	16	231	77	23	10	60	40
Recent	85	41	59	43	23	77	33	15	85	3	0	100
Senior	227	98	3	198	97	3	186	92	8	7	86	14
Nondoctorate	35	51	49	3	67	33	12	17	83	0	0	0
Zoology	126	74	26	241	81	21	512	69	31	126	71	29
Recent	35	26	74	56	32	68	115	7	93	29	28	72
Senior	73	100	0	172	96	4	368	92	8	89	92	8
Nondoctorate	18	61	39	13	62	38	29	14	86	8	0	100
Biochemistry	1,039	71	29	395	74	26	165	85	15	77	79	21
Recent	164	3	97	60	25	75	9	0	100	8	14	86
Senior	863	84	16	329	83	17	155	90	10	69	86	14
Nondoctorate	12	42	58	6	33	67	1	100	0	0	0	0
Microbiology	684	68	32	400	61	39	245	66	35	85	73	27
Recent	107	10	89	94	10	90	35	0	100	15	7	93
Senior	558	80	20	295	80	20	197	79	21	70	87	13
Nondoctorate	19	26	68	11	0	100	13	38	69	0	0	0
Physiology	1,107	61	39	272	71	29	26	73	27	36	72	28
Recent	266	12	88	50	18	82	4	0	100	5	0	100
Senior	824	77	23	218	83	17	22	86	14	30	87	13
Nondoctorate	17	59	47	4	50	75	0	0	0	1	0	100

* Full- and part-time.
**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-18. Full-time faculty in surveyed departments by tenure status, graduate enrollment, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Graduate enrollment *											
	Fewer than 30 students			30 - 49 students			50 - 89 students			90 or more students		
	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)	Number of faculty	Tenured (percent)	Non-tenured (percent)
Mathematical and computer sciences	950	66	34	1,564	76	24	1,391	73	27	1,419	74	27
Mathematics	904	68	32	1,476	76	24	1,135	76	24	968	80	20
Recent **	256	7	93	339	17	83	208	8	93	185	14	86
Senior	588	96	4	1,076	97	3	837	96	4	750	97	3
Nondoctorate	60	55	45	61	36	64	90	47	54	33	67	33
Computer science	46	24	76	88	64	35	256	62	38	451	59	41
Recent	22	5	95	30	13	83	90	19	81	168	15	85
Senior	11	91	9	55	95	5	147	91	9	249	95	5
Nondoctorate	13	0	100	3	0	100	19	37	58	34	18	82
Social sciences	892	69	32	1,354	67	33	2,167	70	30	2,290	72	29
Economics	227	60	40	314	67	33	904	66	34	1,070	68	32
Recent	80	11	89	107	23	77	277	21	79	298	16	84
Senior	131	96	5	187	97	3	571	94	6	698	96	4
Nondoctorate	16	13	88	20	15	85	56	5	95	74	20	80
Political science	309	71	29	367	71	29	738	76	24	792	75	25
Recent	104	26	75	105	15	85	182	18	82	175	9	91
Senior	195	97	4	246	98	2	541	96	4	594	98	2
Nondoctorate	10	40	60	16	25	75	15	27	73	23	15	85
Sociology	356	72	28	673	64	36	525	70	30	428	72	28
Recent	101	32	68	240	17	83	157	15	85	111	9	91
Senior	237	92	8	393	97	3	357	96	4	306	97	3
Nondoctorate	18	39	61	40	28	73	11	27	73	11	36	64
Psychology	235	65	35	279	74	27	774	71	30	2,084	75	25
Recent	83	17	82	71	20	80	244	18	82	512	12	88
Senior	152	90	10	205	93	7	523	95	5	1,540	97	3
Nondoctorate	0	0	0	3	33	67	7	29	71	32	19	81

* Full- and part-time.

**Faculty who have held doctorates seven years or less.

Source: National Science Foundation.

Table B-19. Number of surveyed departments, full-time faculty, and full-time and total graduate students, by control of institution and field: Spring 1980

Field and control of institution	Departments	Full-time faculty	All students	Full-time students
All fields	1,866	39,760	104,196	76,791
Public	1,270	29,233	70,328	54,796
Private	596	10,527	33,868	21,995
Engineering	379	7,236	29,769	18,233
Public	270	5,465	19,412	12,983
Private	109	1,771	10,357	5,250
Chemical	88	1,039	4,146	3,198
Public	62	769	2,924	2,347
Private	26	270	1,222	851
Civil	94	1,886	7,786	4,838
Public	67	1,503	5,972	3,987
Private	27	383	1,814	851
Electrical	100	2,313	11,922	6,296
Public	73	1,715	6,551	3,959
Private	27	598	5,371	2,337
Mechanical	97	1,998	5,915	3,901
Public	68	1,478	3,965	2,690
Private	29	520	1,950	1,211
Physical sciences	369	8,354	21,580	18,636
Public	247	6,130	15,020	13,407
Private	122	2,224	6,560	5,229
Chemistry	137	3,379	10,434	9,181
Public	90	2,495	7,374	6,673
Private	47	884	3,060	2,508
Geology	94	1,394	4,822	3,889
Public	64	1,040	3,249	2,702
Private	30	354	1,573	1,187
Physics	138	3,581	6,324	5,566
Public	93	2,595	4,397	4,032
Private	45	986	1,927	1,534
Biological sciences	499	8,768	15,574	12,392
Public	353	6,519	11,686	9,446
Private	146	2,249	3,888	2,946
Biology	90	2,400	5,128	4,399
Public	46	1,534	3,121	2,818
Private	44	866	2,007	1,581
Botany	50	832	1,673	1,342
Public	48	798	1,612	1,281
Private	2	34	61	61
Zoology	44	1,005	1,585	1,381
Public	43	980	1,518	1,315
Private	1	25	67	66

Table B-19. Number of surveyed departments, full-time faculty, and full-time and total graduate students, by control of institution and field: Spring 1980 -- con.

Field and control of institution	Departments	Full-time faculty	All students	Full-time students
Biological sciences (continued)				
Biochemistry	113	1,676	2,604	2,240
Public	78	1,178	2,070	1,730
Private	35	498	534	510
Microbiology	103	1,414	3,111	1,977
Public	72	1,019	2,449	1,548
Private	31	395	662	429
Physiology	99	1,441	1,601	1,180
Public	66	1,010	916	754
Private	33	431	685	426
Mathematical and computer sciences	188	5,325	10,236	6,751
Public	122	4,044	6,793	5,070
Private	66	1,281	3,443	1,681
Mathematics	124	4,485	5,421	4,070
Public	80	3,441	3,712	3,006
Private	44	1,044	1,709	1,064
Computer science	64	840	4,815	2,681
Public	42	603	3,081	2,064
Private	22	237	1,734	617
Social sciences	303	6,704	16,336	12,088
Public	194	4,601	9,547	7,223
Private	109	2,103	6,789	4,865
Economics	107	2,517	7,097	5,209
Public	69	1,695	4,094	3,068
Private	38	822	3,003	2,141
Political science	96	2,204	5,055	3,691
Public	60	1,457	2,862	2,079
Private	36	747	2,193	1,612
Sociology	100	1,983	4,184	3,188
Public	65	1,449	2,591	2,076
Private	35	534	1,593	1,112
Psychology	128	3,373	10,701	8,691
Public	84	2,475	7,870	6,667
Private	44	898	2,831	2,024

Source: National Science Foundation

Table B-20. Total and mean number of full-time faculty per surveyed department by control of institution and field: Spring 1980

Field	All institutions			Public institutions			Private institutions		
	Departments (number)	Faculty (number)	Faculty per department (mean number)	Departments (number)	Faculty (number)	Faculty per department (mean number)	Departments (number)	Faculty (number)	Faculty per department (mean number)
All fields	1,866	39,760	21.31	1,270	29,233	23.02	596	10,527	17.66
Engineering	379	7,236	19.09	270	5,465	20.24	109	1,771	16.24
Chemical	88	1,039	11.82	62	769	12.40	26	271	10.42
Civil	94	1,886	20.06	67	1,503	22.45	27	383	14.15
Electrical	100	2,313	23.13	73	1,715	23.49	27	598	22.15
Mechanical	97	1,998	20.60	68	1,479	21.75	29	520	17.90
Physical sciences	369	8,354	22.64	247	6,130	24.81	122	2,224	18.23
Chemistry	137	3,380	24.66	90	2,495	27.72	47	884	18.81
Geology	94	1,394	14.83	64	1,040	16.25	30	354	11.80
Physics	138	3,580	25.94	93	2,595	27.89	45	986	21.91
Biological sciences	499	8,768	17.57	353	6,519	18.46	146	2,249	15.41
Biology	90	2,400	26.66	46	1,534	33.33	44	866	19.68
Botany	50	832	16.64	48	798	16.63	2	34	12.50
Zoology	44	1,005	22.84	43	980	22.79	1	25	34.00
Biochemistry	113	1,676	14.83	78	1,178	15.09	35	498	14.26
Microbiology	103	1,414	13.73	72	1,019	14.17	31	395	12.74
Physiology	99	1,441	14.56	66	1,010	15.30	33	431	13.06
Mathematical and computer sciences	188	5,325	28.32	122	4,044	33.14	66	1,281	19.41
Mathematics	124	4,485	36.17	80	3,441	43.01	44	1,044	23.72
Computer science	64	840	13.33	42	603	14.36	22	237	10.77
Social sciences	303	6,704	21.13	194	4,600	23.73	109	2,104	19.29
Economics	107	2,517	23.51	69	1,695	24.55	38	822	21.63
Political science	96	2,204	22.96	60	1,457	24.28	36	748	20.75
Sociology	100	1,983	19.83	65	1,448	22.29	35	534	15.26
Psychology	128	3,373	26.35	84	2,475	29.46	44	898	20.41

Source: National Science Foundation

Table B-21. Full-time faculty in surveyed departments by age, doctoral status, and field: Spring 1980

Field and doctoral status	All faculty (number)	Age (percent)							
		Under 30	30-39	40-49	50-54	55-59	60-64	65-69	70 and over
All fields	39,760	6	33	31	12	10	6	2	0
Doctorates*	37,922	5	33	32	12	10	6	2	0
Nondoctorates	1,838	18	19	13	13	19	13	4	0
Engineering	7,236	6	26	34	13	12	6	2	0
Doctorates	6,455	6	28	36	13	10	5	1	0
Nondoctorates	781	10	8	13	16	28	17	7	0
Chemical	1,039	10	25	31	14	10	8	1	0
Doctorates	993	9	26	32	14	10	7	1	0
Nondoctorates	46	36	2	7	3	21	28	2	0
Civil	1,886	4	29	34	12	12	6	2	0
Doctorates	1,618	4	31	38	12	10	4	1	0
Nondoctorates	268	10	12	12	16	28	17	5	1
Electrical	2,313	6	26	35	14	11	6	2	0
Doctorates	2,134	6	28	36	14	10	5	1	0
Nondoctorates	179	10	9	13	20	28	15	5	0
Mechanical	1,998	6	23	35	12	14	6	2	0
Doctorates	1,710	6	26	38	12	12	5	1	0
Nondoctorates	288	7	6	15	15	30	16	10	0
Physical sciences	8,354	3	27	36	14	11	7	2	0
Doctorates	8,218	3	28	36	14	11	6	2	0
Nondoctorates	136	9	16	22	19	13	17	4	0
Chemistry	3,380	4	30	34	12	10	7	2	0
Doctorates	3,323	4	30	34	12	10	7	2	0
Nondoctorates	57	8	27	19	14	11	13	9	0
Geology	1,394	5	28	34	14	9	7	2	0
Doctorates	1,366	5	29	34	13	9	7	2	0
Nondoctorates	28	17	5	20	32	9	12	4	0
Physics	3,580	2	25	38	15	12	6	2	0
Doctorates*	3,529	2	25	38	15	12	6	2	0
Nondoctorates	51	3	4	13	9	9	12	0	0
Biological sciences	8,768	3	36	29	13	10	7	2	0
Doctorates	8,515	3	35	29	14	10	7	2	0
Nondoctorates	253	14	26	17	12	18	11	2	0
Biology	2,400	3	35	30	12	11	7	2	0
Doctorates	2,349	3	35	30	12	10	7	2	0
Nondoctorates	51	6	33	17	11	20	11	3	0

*Includes both recent and senior doctorates.

Source: National Science Foundation

Table B-21. Full-time faculty in surveyed departments by age, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	All faculty (number)	Age (percent)							
		Under 30	30-39	40-49	50-54	55-59	60-64	65-69	70 and over
Biological sciences (continued)									
Botany	832	4	30	29	13	10	11	3	0
Doctorates*	782	3	30	29	13	10	11	3	0
Nondoctorates	50	14	24	27	15	14	6	0	0
Zoology	1,005	6	35	25	12	11	9	3	0
Doctorates	937	4	36	27	12	10	9	4	0
Nondoctorates	68	28	24	6	6	26	10	0	0
Biochemistry	1,676	2	31	32	15	10	7	3	0
Doctorates	1,657	2	31	32	15	9	7	2	0
Nondoctorates	19	21	20	12	7	25	6	8	0
Microbiology	1,414	2	36	29	15	10	7	2	0
Doctorates	1,371	2	37	28	15	10	6	2	0
Nondoctorates	43	5	18	37	19	6	15	0	0
Physiology	1,441	2	42	27	13	9	6	2	0
Doctorates	1,419	2	42	27	13	8	5	2	1
Nondoctorates	22	0	46	0	11	15	21	7	0
Mathematical and computer sciences	5,325	9	37	30	11	8	4	2	0
Doctorates	5,010	8	38	30	11	7	3	1	0
Nondoctorates	315	24	21	14	14	11	13	4	0
Mathematics	4,485	8	36	30	11	8	4	2	0
Doctorates	4,239	8	37	31	11	7	4	2	0
Nondoctorates	246	18	16	15	16	13	17	4	0
Computer science	840	14	42	25	10	7	1	1	0
Doctorates	771	12	43	26	10	7	1	0	0
Nondoctorates	69	39	32	10	11	4	2	2	0
Social sciences	6,704	7	37	26	10	10	6	2	0
Doctorates	6,395	6	37	27	10	10	7	2	0
Nondoctorates	309	39	30	7	5	5	5	1	0
Economics	2,517	13	35	25	10	9	5	2	0
Doctorates	2,350	10	36	26	11	9	5	2	1
Nondoctorates	167	52	33	4	3	4	4	1	0
Political science	2,204	5	36	29	9	11	7	3	0
Doctorates	2,141	4	36	30	9	11	7	3	0
Nondoctorates	63	37	38	5	6	3	10	2	0
Sociology	1,983	4	40	25	12	11	7	1	0
Doctorates	1,903	3	40	26	12	11	7	2	0
Nondoctorates	80	15	45	15	12	8	4	2	0
Psychology	3,373	7	38	28	11	9	5	2	0
Doctorates	3,330	7	38	28	11	9	5	2	0
Nondoctorates	43	35	40	7	7	4	8	0	0

*Includes both recent and senior doctorates.

Source: National Science Foundation

Table B-22. Full-time faculty in surveyed departments, by broad racial/ethnic category, doctoral status, and field: Spring 1980

Field	White (not Hispanic) faculty (total)		White, not Hispanic						All other faculty (total)		All others					
			Recent* doctorates		Senior doctorates		Non-doctorates				Recent doctorates		Senior doctorates		Non-doctorates	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
All fields	35,806	92	7,363	19	26,810	69	1,633	4	3,012	8	909	2	2,022	5	81	0
Engineering	6,278	89	1,190	17	4,344	61	744	10	812	11	244	3	550	8	18	0
Chemical	933	91	194	19	698	68	41	4	94	9	36	4	56	5	2	0
Civil	1,620	87	331	18	1,024	55	265	14	243	13	77	4	163	9	3	0
Electrical	1,997	88	358	16	1,474	65	165	7	266	12	69	3	191	8	6	0
Mechanical	1,728	89	307	16	1,148	59	273	14	209	11	62	3	140	7	7	0
Physical sciences	7,592	93	1,037	13	6,431	79	124	2	561	7	114	1	442	5	5	0
Chemistry	3,080	95	473	15	2,556	79	51	2	173	5	39	1	132	4	2	0
Geology	1,309	95	244	18	1,038	76	27	2	63	5	16	1	46	3	1	0
Physics	3,203	91	320	9	2,837	80	46	1	325	9	59	2	264	7	2	0
Biological sciences	7,965	94	1,486	17	6,252	74	227	3	531	6	114	1	401	5	16	0
Biology	2,171	95	410	18	1,712	75	49	2	118	5	31	1	85	4	2	0
Botany	805	97	154	19	601	72	50	6	26	3	10	1	16	2	0	0
Zoology	952	97	212	22	678	69	62	6	29	3	7	1	18	2	4	0
Biochemistry	1,498	92	207	13	1,273	78	18	1	139	8	22	1	117	7	0	0
Microbiology	1,266	94	225	17	1,006	75	35	3	79	6	16	1	58	4	5	0
Physiology	1,273	90	278	20	982	69	13	1	140	10	28	2	107	8	5	0
Mathematical and computer sciences	4,672	91	1,112	22	3,331	65	229	4	458	9	156	3	291	6	11	0
Mathematics	3,921	91	844	20	2,914	68	163	4	375	9	116	3	248	6	11	0
Computer science	751	90	268	32	417	50	66	8	83	10	40	5	43	5	0	0
Social sciences	6,090	92	1,717	26	4,102	62	271	4	497	8	201	3	270	4	26	0
Economics	2,250	91	657	27	1,443	58	150	6	220	9	83	3	125	5	12	0
Political science	2,024	95	503	24	1,469	69	52	2	114	5	44	2	63	3	7	0
Sociology	1,816	92	557	28	1,190	60	69	3	163	8	74	4	82	4	7	0
Psychology	3,209	95	821	24	2,350	70	38	1	153	5	80	2	68	2	5	0

*Faculty who have held doctorates seven years or less.

NOTE: The total number of faculty reported in this table differs from the total in other tables because not all respondents replied to the question from which these data were obtained.

Source: National Science Foundation

Table B-23. Full-time racial/ethnic minority faculty in surveyed departments by minority group, doctoral status, and field: Spring 1980

Field and doctoral status	Racial/ethnic minority group faculty (total)		Racial/ethnic minority group							
			American Indian or Alaskan native		Asian or Pacific Islander		Black, not Hispanic		Hispanic	
	Number	Percent of all faculty	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All fields	3,010	8	72	2	2,068	69	426	14	444	15
Recent doctorates*	911	11	6	1	571	63	175	19	159	17
Senior doctorates	2,020	7	60	3	1,472	75	213	11	275	14
Nondoctorates	79	4	6	8	25	32	38	48	10	13
Engineering	815	11	33	4	656	80	41	5	85	10
Recent doctorates	246	17	0	0	196	80	8	3	42	17
Senior doctorates	550	11	30	5	457	83	24	4	39	7
Nondoctorates	19	2	3	16	3	16	9	47	4	21
Chemical	95	9	0	0	76	80	6	6	13	14
Recent doctorates	37	16	0	0	32	86	0	0	5	14
Senior doctorates	56	7	0	0	44	79	5	9	7	13
Nondoctorates	2	5	0	0	0	0	1	50	1	50
Civil	243	13	3	1	184	76	10	4	46	19
Recent doctorates	77	19	0	0	48	62	3	4	26	34
Senior doctorates	162	14	3	2	135	83	7	4	17	10
Nondoctorates	4	1	0	0	1	25	0	0	3	75
Electrical	267	12	8	3	232	87	12	4	15	6
Recent doctorates	69	16	0	0	60	87	2	3	7	10
Senior doctorates	192	12	8	4	170	89	6	3	8	4
Nondoctorates	6	4	0	0	2	33	4	67	0	0
Mechanical	210	11	22	10	164	78	13	6	11	5
Recent doctorates	63	17	0	0	56	89	3	5	4	6
Senior doctorates	140	11	19	14	108	77	6	4	7	5
Nondoctorates	7	3	3	43	0	0	4	57	0	0

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-23. Full-time racial/ethnic minority faculty in surveyed departments by minority group, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Racial/ethnic minority group faculty (total)		Racial/ethnic minority group							
			American Indian or Alaskan native		Asian or Pacific Islander		Black, not Hispanic		Hispanic	
	Number	Percent of all faculty	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Physical sciences	563	7	4	1	453	80	51	9	55	10
Recent doctorates*	116	10	0	0	86	74	14	12	16	14
Senior doctorates	441	6	4	1	365	83	33	7	39	9
Nondoctorates	6	5	0	0	2	33	4	67	0	0
Chemistry	174	5	2	1	117	67	38	22	17	10
Recent doctorates	40	8	0	0	27	68	12	30	1	2
Senior doctorates	132	5	2	2	88	67	26	20	16	12
Nondoctorates	2	4	0	0	2	100	0	0	0	0
Geology	64	5	1	2	45	70	3	5	15	23
Recent doctorates	17	7	0	0	7	41	0	0	10	59
Senior doctorates	46	4	1	2	38	83	2	4	5	11
Nondoctorates	1	4	0	0	0	0	1	100	0	0
Physics	325	9	1	0	291	90	10	3	23	7
Recent doctorates	59	16	0	0	52	88	2	3	5	8
Senior doctorates	263	8	1	0	239	91	5	2	18	7
Nondoctorates	3	6	0	0	0	0	3	100	0	0
Biological Sciences	530	6	15	3	336	63	74	14	105	20
Recent doctorates	114	7	1	1	88	77	13	11	12	11
Senior doctorates	400	6	12	3	242	61	55	14	91	23
Nondoctorates	16	7	2	13	6	38	6	38	2	13
Biology	120	5	5	4	81	68	17	14	17	14
Recent doctorates	32	7	1	3	23	72	3	9	5	16
Senior doctorates	86	5	4	5	56	65	14	16	12	14
Nondoctorates	2	4	0	0	2	100	0	0	0	0
Botany	26	3	1	4	17	65	3	12	5	19
Recent doctorates	10	6	0	0	8	80	0	0	2	20
Senior doctorates	16	3	1	6	9	56	3	19	3	19
Nondoctorates	0	0	0	0	0	0	0	0	0	0

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-23. Full-time racial/ethnic minority faculty in surveyed departments by minority group, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Racial/ethnic minority group faculty (total)		Racial/ethnic minority group							
			American Indian or Alaskan native		Asian or Pacific Islander		Black, not Hispanic		Hispanic	
	Number	Percent of all faculty	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Biological sciences (continued)										
Zoology	27	3	4	15	13	48	7	26	3	11
Recent doctorates*	6	3	0	0	3	50	3	50	0	0
Senior doctorates	17	2	2	12	10	59	2	12	3	18
Nondoctorates	4	6	2	50	0	0	2	50	0	0
Biochemistry	138	8	1	1	111	80	14	10	12	9
Recent doctorates	22	10	0	0	21	95	1	5	0	0
Senior doctorates	116	8	1	1	90	78	13	11	12	10
Nondoctorates	0	0	0	0	0	0	0	0	0	0
Microbiology	79	6	3	4	49	62	11	14	16	20
Recent doctorates	16	7	0	0	9	56	3	19	4	25
Senior doctorates	58	5	3	5	39	67	6	10	10	17
Nondoctorates	5	13	0	0	1	20	2	40	2	40
Physiology	140	10	1	1	65	46	22	16	52	37
Recent doctorates	28	9	0	0	24	86	3	11	1	4
Senior doctorates	107	10	1	1	38	36	17	16	51	48
Nondoctorates	5	28	0	0	3	60	2	40	0	0
Mathematical and computer sciences	458	9	5	1	345	75	52	11	56	12
Recent doctorates	156	5	0	0	117	75	23	15	16	10
Senior doctorates	292	8	5	2	223	76	25	9	39	13
Nondoctorates	10	4	0	0	5	50	4	40	1	10
Mathematics	374	9	3	1	274	73	48	13	49	13
Recent doctorates	116	12	0	0	79	68	21	18	16	14
Senior doctorates	248	8	3	1	190	77	23	9	32	13
Nondoctorates	10	6	0	0	5	50	4	40	1	10
Computer science	84	10	2	2	71	85	4	5	7	8
Recent doctorates	40	13	0	0	38	95	2	5	0	0
Senior doctorates	44	10	2	5	33	75	2	5	7	16
Nondoctorates	0	0	0	0	0	0	0	0	0	0

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-23. Full-time racial/ethnic minority faculty in surveyed departments by minority group, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Racial/ethnic minority group faculty (total)		. . . Racial/ethnic minority group							
			American Indian or Alaskan native		Asian or Pacific Islander		Black, nor Hispanic		Hispanic	
	Number	Percent of all faculty	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Social sciences	491	7	5	1	249	51	123	25	114	23
Recent doctorates*	198	10	3	2	72	36	67	34	56	28
Senior doctorates	269	6	1	0	168	62	45	17	55	20
Nondoctorates	24	8	1	4	9	38	11	46	3	13
Economics	218	9	3	1	150	69	14	6	51	23
Recent doctorates	82	11	2	2	52	63	8	10	20	24
Senior doctorates	124	8	1	1	90	73	4	3	29	23
Nondoctorates	12	7	0	0	8	67	2	17	2	17
Political science	112	5	1	1	50	45	38	34	23	21
Recent doctorates	43	8	0	0	10	23	20	46	13	30
Senior doctorates	63	4	0	0	40	63	13	21	10	16
Nondoctorates	6	10	1	17	0	0	5	83	0	0
Sociology	161	8	1	1	49	30	71	44	40	25
Recent doctorates	73	12	1	1	10	14	39	53	23	32
Senior doctorates	82	6	0	0	38	46	28	34	16	20
Nondoctorates	6	8	0	0	1	17	4	67	1	17
Psychology	153	5	10	7	29	19	85	56	29	19
Recent doctorates	81	9	2	2	12	15	50	62	17	21
Senior doctorates	68	3	8	12	17	25	31	46	12	18
Nondoctorates	4	12	0	0	0	0	4	100	0	0

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-24. Full-time faculty in surveyed departments by sex, doctoral status, and field: Spring 1980

Field	Recent doctorates*			Senior doctorates			Nondoctorates		
	Total (number)	Male (percent)	Female (percent)	Total (number)	Male (percent)	Female (percent)	Total (number)	Male (percent)	Female (percent)
All fields	8,445	86	14	29,477	95	5	1,838	82	18
Engineering	1,423	97	3	5,032	99	1	781	98	2
Chemical	234	97	3	759	100	0	46	100	0
Civil	405	97	3	1,213	100	0	268	100	0
Electrical	405	95	5	1,729	99	1	179	97	3
Mechanical	379	98	2	1,331	100	0	288	98	2
Physical sciences	1,192	95	5	7,026	98	2	136	73	27
Chemistry	536	92	8	2,787	97	3	57	54	46
Geology	268	94	6	1,098	98	2	28	82	18
Physics	388	96	4	3,141	98	2	51	90	10
Biological sciences	1,687	82	18	6,828	92	8	253	62	38
Biology	469	79	21	1,880	92	8	51	51	49
Botany	164	88	12	618	95	5	50	73	27
Zoology	235	85	15	702	94	6	68	80	20
Biochemistry	241	82	18	1,416	92	8	19	74	26
Microbiology	251	81	19	1,120	87	13	43	35	65
Physiology	327	85	15	1,092	92	8	22	50	50
Mathematical and computer sciences	1,298	90	10	3,712	96	4	315	65	35
Mathematics	988	91	9	3,251	96	4	246	59	41
Computer science	310	87	13	461	97	3	69	80	20
Social sciences	1,935	82	18	4,459	93	7	310	82	18
Economics	762	91	9	1,588	96	4	167	87	13
Political science	565	81	19	1,576	95	5	63	78	22
Sociology	608	71	29	1,295	88	12	80	75	25
Psychology	910	66	34	2,420	90	10	43	49	51

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-25. Full-time nonfaculty research doctorates in surveyed departments by doctoral status and field: Spring 1980

Field	All nonfaculty (number)	Recent doctorates * (percent)	Senior doctorates (percent)
All fields	4,178	72	28
Engineering	470	70	30
Chemical	101	82	18
Civil	97	73	27
Electrical	148	72	28
Mechanical	124	56	44
Physical sciences	1,606	70	30
Chemistry	701	78	22
Geology	236	65	35
Physics	669	64	36
Biological science	1,820	74	26
Biology	412	68	32
Botany	93	81	19
Zoology	75	88	12
Biochemistry	659	78	22
Microbiology	263	74	26
Physiology	318	69	31
Mathematical and computer sciences	94	61	39
Mathematics	35	51	49
Computer science	59	66	34
Social sciences	57	77	23
Economics	14	43	57
Political science	11	73	27
Sociology	32	94	6
Psychology	131	78	22

*Nonfaculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-26. Full-time nonfaculty research doctorates in surveyed departments by control of institution, doctoral status, and field: Spring 1980

Field	Public institutions			Private institutions		
	All nonfaculty (number)	Recent doctorates* (percent)	Senior doctorates (percent)	All nonfaculty (number)	Recent doctorates (percent)	Senior doctorates (percent)
All fields	2,324	72	28	1,854	71	29
Engineering	247	65	35	223	76	24
Chemical	70	84	16	31	75	25
Civil	44	57	43	53	87	13
Electrical	67	68	32	81	75	25
Mechanical	66	45	55	58	69	31
Physical sciences	900	71	29	706	70	30
Chemistry	372	75	25	329	82	18
Geology	75	64	36	161	63	35
Physics	453	68	32	216	57	43
Biological sciences	1,058	77	23	762	72	28
Biology	241	77	23	171	55	45
Botany	85	82	18	8	75	25
Zoology	71	88	12	4	75	25
Biochemistry	289	70	30	370	84	16
Microbiology	160	79	21	103	66	44
Physiology	212	74	26	106	61	39
Mathematical and computer sciences	32	69	31	62	60	40
Mathematics	8	88	12	27	44	56
Computer science	24	63	37	35	71	29
Social sciences	24	83	17	33	76	24
Economics	7	57	43	7	38	62
Political science	2	0	100	9	78	22
Sociology	15	93	7	17	94	6
Psychology	63	81	19	68	74	26

*Nonfaculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-27. Full-time nonfaculty research doctorates in surveyed departments by Roose-Andersen department rating, doctoral status, and field: Spring 1980

Field	Roose-Andersen rating					
	Distinguished or strong			All others		
	Number of non-faculty	Recent doctorates* (percent)	Senior doctorates (percent)	Number of non-faculty	Recent doctorates (percent)	Senior doctorates (percent)
All fields**	1,917	69	31	1,790	77	23
Engineering	226	65	35	244	75	25
Chemical	15	73	27	86	84	16
Civil	44	86	14	53	62	38
Electrical	92	67	33	56	80	20
Mechanical	75	48	52	49	69	31
Physical sciences	823	65	35	783	76	24
Chemistry	311	76	24	390	80	20
Geology	157	62	38	79	70	30
Physics	355	57	43	314	73	27
Biological sciences	737	74	26	671	78	22
Biology**	-	-	-	-	-	-
Botany	53	87	13	40	73	27
Zoology	49	82	18	26	100	0
Biochemistry	354	79	21	305	77	23
Microbiology	139	63	37	124	86	14
Physiology	142	64	36	176	74	26
Mathematical and computer sciences	26	35	65	9	100	0
Mathematics	26	35	65	9	100	0
Computer science**	-	-	-	-	-	-
Social sciences	25	68	32	32	82	18
Economics	7	14	86	7	63	37
Political science	5	80	20	6	67	33
Sociology	13	92	8	19	95	5
Psychology	81	81	19	50	72	28

*Nonfaculty who have held doctorates seven years or less.
**Biology and computer science departments were not rated in the Roose-Andersen survey.

Source: National Science Foundation

Table B-28. Full-time nonfaculty research doctorates in surveyed departments by level of total Federal R&D obligations to institution, doctoral status, and field: Spring 1980

Field	R & D funding level								
	First 50 institutions*			Second 50 institutions			Remaining institutions		
	All non-faculty (number)	Recent** doctorates (percent)	Senior doctorates (percent)	All non-faculty (number)	Recent doctorates (percent)	Senior doctorates (percent)	All non-faculty (number)	Recent doctorates (percent)	Senior doctorates (percent)
All fields	2,569	69	31	804	76	24	805	78	22
Engineering	267	68	32	102	71	29	101	75	25
Chemical	42	76	24	24	75	25	35	94	6
Civil	50	86	14	26	81	19	21	29	71
Electrical	109	71	28	18	72	28	21	76	24
Mechanical	66	43	57	34	59	41	24	87	13
Physical sciences	974	66	34	322	78	22	310	77	23
Chemistry	361	76	24	178	82	18	162	79	21
Geology	169	63	37	30	63	37	37	76	24
Physics	444	60	41	114	75	25	111	74	26
Biological sciences	1,151	73	27	302	72	27	367	79	21
Biology	252	68	32	59	63	37	101	71	30
Botany	57	84	16	9	89	11	27	70	30
Zoology	53	81	19	1	100	0	21	100	0
Biochemistry	411	78	22	102	71	29	146	84	16
Microbiology	200	69	31	29	97	3	34	82	18
Physiology	178	67	33	102	73	27	38	71	29
Mathematical and computer sciences	58	47	53	34	82	18	2	0	100
Mathematics	31	47	53	2	100	0	2	100	0
Computer science	27	48	52	32	81	19	0	0	0
Social sciences	33	71	29	13	92	8	11	82	18
Economics	9	30	70	5	80	20	0	0	0
Political science	4	80	20	2	100	0	5	60	40
Sociology	20	90	10	6	100	0	6	100	0
Psychology	86	76	24	31	81	19	14	79	14

*In total Federal obligations to institutions for research and development activities, FY 1977.
**Nonfaculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-29. Full-time nonfaculty research doctorates in doctorate-level departments by graduate enrollment, doctoral status, and field: Spring 1980

Field	Graduate enrollment*											
	Fewer than 30 students			30-49 students			50-89 students			90 or more students		
	All nonfaculty (number)	Recent** doctorates (percent)	Senior doctorates (percent)	All nonfaculty (number)	Recent doctorates (percent)	Senior doctorates (percent)	All nonfaculty (number)	Recent doctorates (percent)	Senior doctorates (percent)	All nonfaculty (number)	Recent doctorates (percent)	Senior doctorates (percent)
All fields	931	77	23	815	75	25	865	69	31	1,567	70	30
Engineering	43	81	19	61	67	33	106	69	31	260	69	31
Chemical	22	95	5	33	70	30	24	83	17	22	83	17
Civil	3	67	33	7	43	57	20	40	60	67	87	13
Electrical	8	50	50	8	75	25	17	0	100	115	69	31
Mechanical	10	80	20	13	69	31	45	62	38	56	44	56
Physical sciences	85	81	19	243	75	25	368	70	30	910	69	31
Chemistry	17	71	29	72	68	32	200	75	25	412	83	17
Geology	6	100	0	45	91	9	56	52	48	129	60	40
Physics	62	82	18	126	73	27	112	71	29	369	56	44
Biological sciences	783	76	24	449	77	23	322	52	48	266	76	24
Biology	33	58	42	67	81	19	106	45	55	206	77	23
Botany	35	94	6	29	79	21	28	64	36	1	100	0
Zoology	2	100	0	3	100	0	53	87	13	17	88	12
Biochemistry	353	81	19	223	76	24	52	73	27	31	65	35
Microbiology	106	67	33	91	79	21	63	78	22	3	75	25
Physiology	254	72	28	36	64	36	20	55	45	8	75	25
Mathematical and computer sciences	0	0	0	20	65	35	34	85	15	40	43	57
Mathematics	0	0	0	8	88	12	5	100	0	22	32	68
Computer science	0	0	0	12	50	50	29	83	17	18	56	44
Social sciences	7	0	100	13	85	15	11	100	0	26	63	37
Economics	0	0	0	3	100	0	0	0	0	11	34	66
Political science	0	0	0	1	0	100	4	100	0	6	83	17
Sociology	7	0	100	9	89	11	7	100	0	9	89	11
Psychology	13	0	100	29	76	24	25	80	20	64	75	25

*Full-and part-time.

**Nonfaculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-30. Full-time nonfaculty research doctorates in surveyed departments by sex and field: Spring 1980

Field	All nonfaculty doctorates (number)	Male (percent)	Female (percent)
All fields	4,178	81	19
Engineering	470	96	4
Chemical	101	95	5
Civil	97	97	3
Electrical	148	98	2
Mechanical	124	95	5
Physical sciences	1,606	89	11
Chemistry	701	85	15
Geology	236	91	9
Physics	669	92	8
Biological sciences	1,820	70	30
Biology	412	61	39
Botany	93	78	22
Zoology	75	67	33
Biochemistry	659	71	29
Microbiology	263	72	28
Physiology	318	76	24
Mathematical and computer sciences	94	91	9
Mathematics	35	85	15
Computer science	59	94	6
Social sciences	57	84	16
Economics	14	100	0
Political science	11	83	17
Sociology	32	81	19
Psychology	131	66	44

Source: National Science Foundation

Table B-31. Full-time nonfaculty research doctorates in surveyed departments by age and field: Spring 1980

Field	All nonfaculty doctorates (number)	Age (percent)					
		Under 30	30-39	40-49	50-59	60-69	Over 70
All fields	4,178	28	55	12	4	1	0
Engineering	470	28	54	11	6	1	0
Chemical	101	34	52	10	4	0	0
Civil	97	27	57	9	6	1	0
Electrical	148	24	55	14	7	0	0
Mechanical	124	31	50	10	6	2	0
Physical sciences	1,606	47	55	16	4	2	0
Chemistry	701	30	46	17	4	1	0
Geology	236	13	63	17	6	1	0
Physics	669	20	58	16	4	2	0
Biological sciences	1,820	33	54	9	4	1	0
Biology	412	29	51	11	7	2	0
Botany	93	15	54	13	15	0	3
Zoology	75	21	68	6	3	2	0
Biochemistry	659	42	49	7	1	0	0
Microbiology	263	32	52	10	5	0	0
Physiology	318	23	64	10	1	1	0
Mathematical and computer sciences	94	16	66	11	6	1	0
Mathematics	35	19	50	16	13	3	0
Computer science	59	15	75	8	2	0	0
Social sciences	57	22	67	11	0	0	0
Economics	14	22	56	22	0	0	0
Political science	11	0	80	20	0	0	0
Sociology	32	31	65	4	0	0	0
Psychology	131	18	62	13	7	1	0

Source: National Science Foundation

Table B-32. Full-time nonfaculty research doctorates in departments by broad racial/ethnic category and field: Spring 1980

Field	All white (not Hispanic) nonfaculty (total)		White, not Hispanic				All other nonfaculty (total)		All others			
			Recent doctorates*		Senior doctorates				Recent doctorates		Senior doctorates	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All fields	2,739	78	1,938	55	801	23	773	22	578	16	195	6
Engineering	254	68	156	41	98	26	122	32	105	28	17	5
Chemical	32	46	23	33	9	13	38	54	33	47	5	7
Civil	56	64	34	39	22	25	31	36	28	32	3	3
Electrical	92	75	55	45	37	30	30	25	26	21	4	3
Mechanical	74	76	44	45	30	36	23	24	18	19	5	5
Physical sciences	1,023	78	688	52	335	26	289	22	216	16	73	6
Chemistry	362	69	263	50	99	19	163	31	129	25	34	6
Geology	182	86	114	54	68	32	30	14	18	8	12	6
Physics	479	83	311	54	168	29	96	17	69	12	27	5
Biological sciences	1,230	78	921	58	309	20	346	22	245	16	101	6
Biology	323	88	226	61	97	26	45	12	25	7	20	5
Botany	55	92	41	68	14	23	5	8	2	3	3	5
Zoology	60	85	51	72	9	13	11	15	10	14	1	1
Biochemistry	422	74	330	58	92	16	146	26	118	21	28	5
Microbiology	168	69	132	54	36	15	75	31	45	19	30	12
Physiology	202	76	141	53	61	23	64	24	45	17	19	7
Mathematical and computer sciences	73	90	47	58	26	32	8	10	6	15	2	7
Mathematics	25	86	11	38	14	48	4	14	2	7	2	7
Computer science	48	92	36	69	12	23	4	8	4	8	0	0
Social sciences	38	90	32	76	6	14	4	10	3	7	1	2
Economics	7	88	5	63	2	25	1	13	0	0	1	13
Political science	11	100	8	73	3	27	0	0	0	0	0	0
Sociology	20	87	19	83	1	4	3	13	3	13	0	0
Psychology	121	97	94	75	27	22	4	3	3	2	1	1

*Nonfaculty who have held doctorates seven years or less.

NOTE: The total number of nonfaculty research doctorates reported in this table differs from the total in other tables because all respondents replied to the question from which these data were obtained.

Source: National Science Foundation

Table B-33. Full-time racial/ethnic minority nonfaculty research doctorates in surveyed departments by minority group, doctoral status, and field: Spring 1980

Field and doctoral status	Racial/ethnic minority group nonfaculty (total)		Racial/ethnic minority group							
			American Indian or Alaskan native		Asian or Pacific Islander		Black, not Hispanic		Hispanic	
	Number	Percent of all nonfaculty	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All fields	775	19	10	1	680	87	23	3	65	8
Recent doctorates*	580	19	6	1	504	87	20	3	52	9
Senior doctorates	195	17	4	2	176	90	3	2	13	7
Engineering	120	25	0	0	118	98	1	1	1	1
Recent doctorates	104	32	0	0	103	99	1	1	0	0
Senior doctorates	16	11	0	0	15	94	0	0	1	6
Chemical	38	38	0	0	37	97	0	0	1	3
Recent doctorates	33	40	0	0	33	100	0	0	0	0
Senior doctorates	5	28	0	0	4	80	0	0	1	20
Civil	31	32	0	0	30	97	1	3	0	0
Recent doctorates	28	39	0	0	27	96	1	4	0	0
Senior doctorates	3	12	0	0	3	100	0	0	0	0
Electrical	29	20	0	0	29	100	0	0	0	0
Recent doctorates	25	23	0	0	25	100	0	0	0	0
Senior doctorates	4	10	0	0	4	100	0	0	0	0
Mechanical	22	18	0	0	22	100	0	0	0	0
Recent doctorates	18	26	0	0	18	100	0	0	0	0
Senior doctorates	4	7	0	0	4	100	0	0	0	0
Physical sciences	290	18	0	0	269	93	4	1	17	6
Recent doctorates	216	19	0	0	200	93	4	2	12	6
Senior doctorates	74	15	0	0	69	93	0	0	5	7
Chemistry	163	23	0	0	157	96	4	2	2	1
Recent doctorates	129	24	0	0	124	96	4	3	1	1
Senior doctorates	34	22	0	0	33	97	0	0	1	3

*Nonfaculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-33. Full-time racial/ethnic minority nonfaculty research doctorates in surveyed departments by minority group, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Racial/ethnic minority group nonfaculty (total)		Racial/ethnic minority group							
			American Indian or Alaskan native		Asian or Pacific Islander		Black, not Hispanic		Hispanic	
	Number	Percent of all nonfaculty	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Physical sciences (Continued)										
Geology	30	13	0	0	27	90	0	0	3	10
Recent doctorates*	17	11	0	0	15	88	0	0	2	12
Senior doctorates	13	16	0	0	12	92	0	0	1	8
Physics	97	14	0	0	85	88	0	0	12	12
Recent doctorates	70	16	0	0	61	87	0	0	9	13
Senior doctorates	27	11	0	0	24	89	0	0	3	11
Biological sciences	348	19	10	3	280	80	15	4	43	12
Recent doctorates	247	18	6	2	191	77	12	5	38	15
Senior doctorates	101	21	4	4	89	88	3	3	5	5
Biology	46	11	2	4	38	83	1	2	5	11
Recent doctorates	26	9	2	8	19	73	1	4	4	15
Senior doctorates	20	15	0	0	19	95	0	0	1	5
Botany	5	5	0	0	5	100	0	0	0	0
Recent doctorates	2	3	0	0	2	100	0	0	0	0
Senior doctorates	3	17	0	0	3	100	0	0	0	0
Zoology	11	15	0	0	10	91	0	0	1	9
Recent doctorates	10	15	0	0	9	90	0	0	1	10
Senior doctorates	1	11	0	0	1	100	0	0	0	0
Biochemistry	147	22	8	5	117	80	3	2	19	13
Recent doctorates	119	23	4	3	93	78	3	3	19	16
Senior doctorates	28	19	4	14	24	86	0	0	0	0
Microbiology	75	29	0	0	64	85	3	4	8	11
Recent doctorates	45	23	0	0	35	78	3	7	7	16
Senior doctorates	30	43	0	0	29	97	0	0	1	3
Physiology	64	20	0	0	46	72	8	13	10	16
Recent doctorates	45	21	0	0	33	73	5	11	7	16
Senior doctorates	19	19	0	0	13	68	3	16	3	16

*Nonfaculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-33. Full-time racial/ethnic minority nonfaculty research doctorates in surveyed departments by minority group, doctoral status, and field: Spring 1980 -- con.

Field and doctoral status	Racial/ethnic minority group nonfaculty (total)		Racial/ethnic minority group							
			American Indian or Alaskan native		Asian or Pacific Islander		Black, not Hispanic		Hispanic	
	Number	Percent of all nonfaculty	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Mathematical and computer sciences	10	11	0	0	8	80	0	0	2	20
Recent doctorates*	8	14	0	0	6	75	0	0	2	25
Senior doctorates	2	5	0	0	2	100	0	0	0	0
Mathematics	5	14	0	0	4	80	0	0	1	20
Recent doctorates	3	17	0	0	2	67	0	0	1	33
Senior doctorates	2	12	0	0	2	100	0	0	0	0
Computer science	5	8	0	0	4	80	0	0	1	20
Recent doctorates	5	13	0	0	4	80	0	0	1	20
Senior doctorates	0	0	0	0	0	0	0	0	0	0
Social sciences	4	9	0	0	3	75	1	25	0	0
Recent doctorates	3	7	0	0	2	67	1	33	0	0
Senior doctorates	1	8	0	0	1	100	0	0	0	0
Economics	1	7	0	0	1	100	0	0	0	0
Recent doctorates	0	0	0	0	0	0	0	0	0	0
Senior doctorates	1	13	0	0	1	100	0	0	0	0
Political science	0	0	0	0	0	0	0	0	0	0
Recent doctorates	0	0	0	0	0	0	0	0	0	0
Senior doctorates	0	0	0	0	0	0	0	0	0	0
Sociology	3	10	0	0	2	67	1	33	0	0
Recent doctorates	3	10	0	0	2	67	1	33	0	0
Senior doctorates	0	0	0	0	0	0	0	0	0	0
Psychology	3	2	0	0	1	33	1	33	1	33
Recent doctorates	2	2	0	0	1	50	1	50	0	0
Senior doctorates	1	3	0	0	0	0	0	0	1	100

*Nonfaculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-34. Full-time faculty appointments in surveyed departments by tenure status and field: Spring 1980

Field	Number of appointments	Percent tenured	Percent nontenured
All fields	2,817	13	87
Engineering	583	12	88
Chemical	80	7	93
Civil	177	7	93
Electrical	173	24	76
Mechanical	153	7	93
Physical sciences	434	12	88
Chemistry	174	11	89
Geology	82	9	91
Physics	178	14	86
Biological sciences	576	13	87
Biology	121	11	89
Botany	40	3	97
Zoology	51	4	96
Biochemistry	114	7	93
Microbiology	105	15	85
Physiology	145	25	75
Mathematical and computer sciences	492	12	88
Mathematics	391	12	88
Computer science	101	14	86
Social sciences	532	16	84
Economics	257	12	88
Political science	149	14	86
Sociology	126	26	74
Psychology	198	12	88

Source: National Science Foundation

Table B-35. Full-time faculty appointments in 1979-80 in surveyed departments by prior professional status of appointees, Roose-Andersen department rating, and field

Field	Roose-Andersen rating					
	Distinguished or strong					
		Prior professional experience (percent)				
	All faculty (number)	Full-time graduate student	Post-doctorate	Full-time faculty or staff in another academic institution	Full-time employee in industry	Other or unknown
All fields*	611	35	27	31	5	3
Engineering	150	49	14	22	13	4
Chemical	20	55	20	15	10	0
Civil	49	55	12	24	12	0
Electrical	50	48	8	26	16	2
Mechanical	31	35	23	16	10	16
Physical sciences	119	15	50	26	5	1
Chemistry	50	16	54	24	2	2
Geology	19	42	26	21	5	0
Physics	50	4	56	30	8	0
Biological sciences	99	11	56	29	2	3
Biology*	-	-	-	-	-	-
Botany	11	36	27	36	0	0
Zoology	10	20	40	40	0	0
Biochemistry	26	0	65	31	0	4
Microbiology	29	17	66	14	0	7
Physiology	23	0	52	39	9	0
Mathematical and computer sciences	75	40	16	39	0	4
Mathematics	75	40	16	39	0	4
Computer science*	-	-	-	-	-	-
Social sciences	115	54	6	34	2	5
Economics	51	63	8	22	4	6
Political science	35	43	6	46	0	6
Sociology	29	52	3	41	0	3
Psychology	53	32	17	53	0	0

*Biology and computer science departments were not rated in the Roose-Andersen survey.

Source: National Science Foundation

Table B-35. Full-time faculty appointments in 1979-80 in surveyed departments by prior professional status of appointees, Roose-Andersen department rating, and field -- con.

Field	Roose-Andersen rating					
	All others and not rated					
	All faculty (number)	Prior professional experience (percent)				
		Full-time graduate student	Post-doctorate	Full-time faculty or staff in another academic institution	Full-time employee in industry	Other or unknown
All fields*	1,984	34	20	33	6	6
Engineering	435	38	9	27	19	7
Chemical	60	38	5	32	18	7
Civil	130	44	3	20	23	8
Electrical	123	38	8	28	19	8
Mechanical	122	29	17	32	16	6
Physical sciences	315	19	38	31	5	6
Chemistry	124	16	48	25	3	7
Geology	63	24	24	35	8	10
Physics	128	19	36	35	6	2
Biological sciences	355	11	50	35	1	3
Biology*	-	-	-	-	-	-
Botany	29	29	46	25	0	4
Zoology	41	44	27	24	0	5
Biochemistry	88	1	65	32	1	0
Microbiology	75	14	62	19	1	4
Physiology	122	2	41	52	0	5
Mathematical and computer sciences	317	44	9	35	2	10
Mathematics	317	44	9	35	2	10
Computer science*	-	-	-	-	-	-
Social sciences	417	50	5	39	3	4
Economics	206	59	6	49	4	6
Political science	114	42	4	47	4	3
Sociology	97	39	6	49	1	4
Psychology	145	40	15	34	1	10

*Biology and computer science departments were not rated in the Roose-Andersen survey.

Source: National Science Foundation

Table B-36. Full-time faculty appointments in 1979-80 in surveyed departments by prior professional status of appointees, level of total Federal R&D obligations to institution, and field

Field	R & D funding level					
	First 50 institutions*					
	All faculty (number)	Prior professional experience (percent)				
		Full-time graduate student	Post-doctorate	Full-time faculty or staff in another academic institution	Full-time employee in industry	Other or unknown
All fields	1,106	34	23	34	6	4
Engineering	253	41	12	27	17	5
Chemical	36	44	14	31	14	0
Civil	76	52	11	24	12	3
Electrical	71	36	9	29	21	6
Mechanical	70	31	14	27	20	8
Physical sciences	146	18	46	29	4	2
Chemistry	55	17	54	26	2	2
Geology	31	37	23	30	3	3
Physics	60	9	50	32	7	2
Biological sciences	208	12	51	33	0	3
Biology	40	18	49	33	0	0
Botany	20	32	16	47	0	5
Zoology	18	28	33	33	0	0
Biochemistry	40	0	70	30	0	2
Microbiology	42	13	65	18	0	5
Physiology	48	4	48	42	0	6
Mathematical and computer sciences	188	38	12	41	4	4
Mathematics	126	33	17	43	2	5
Computer science	62	48	2	39	8	2
Social sciences	221	52	7	36	2	4
Economics	105	61	9	25	3	4
Political science	66	38	5	50	3	5
Sociology	50	51	9	40	0	2
Psychology	90	34	16	42	0	6

* In total Federal obligations to institutions for research and development activities, FY 1977.

Source: National Science Foundation

Table B-36. Full-time faculty appointments in 1979-80 in surveyed departments by prior professional status of appointees, level of total Federal R&D obligations to institution, and field -- con.

Field	R & D funding level					
	Second 50 institutions*					
	All faculty (number)	Prior professional experience (percent)				
		Full-time graduate student	Post-doctorate	Full-time faculty or staff in another academic institution	Full-time employee in industry	Other or unknown
All fields	840	35	22	30	6	7
Engineering	179	46	7	23	18	7
Chemical	25	40	4	28	16	12
Civil	54	50	4	13	30	6
Electrical	63	52	3	27	13	6
Mechanical	37	32	22	27	14	5
Physical sciences	124	11	45	35	3	7
Chemistry	52	10	48	31	2	12
Geology	18	22	17	50	6	11
Physics	54	9	52	33	4	2
Biological sciences	191	10	48	32	2	3
Biology	42	7	60	31	2	0
Botany	8	13	63	25	0	0
Zoology	11	55	36	18	0	0
Biochemistry	23	4	57	39	0	0
Microbiology	36	22	56	11	3	8
Physiology	71	1	35	59	3	3
Mathematical and computer sciences	165	56	5	26	4	10
Mathematics	136	58	4	25	2	11
Computer science	29	45	10	31	10	3
Social sciences	135	51	8	33	2	8
Economics	73	56	8	27	3	5
Political science	34	47	3	44	3	0
Sociology	28	43	14	36	0	7
Psychology	46	41	9	39	0	11

* In total Federal obligations to institutions for research and development activities, FY 1977.

Source: National Science Foundation

Table B-36. Full-time faculty appointments in 1979-80 in surveyed departments by prior professional status of appointees, level of total Federal R&D obligations to institution, and field -- con.

Field	R & D funding level					
	Remaining institutions*					
	All faculty (number)	Prior professional experience (percent)				
		Full-time graduate student	Post-doctorate	Full-time faculty or staff in another academic institution	Full-time employee in industry	Other or unknown
All fields	871	32	24	33	6	6
Engineering	153	35	11	29	18	8
Chemical	20	40	5	25	25	5
Civil	49	37	0	29	24	12
Electrical	38	34	16	26	21	5
Mechanical	46	30	22	35	4	9
Physical sciences	164	24	37	27	8	5
Chemistry	67	21	49	19	4	6
Geology	33	27	27	24	12	9
Physics	64	27	28	36	9	2
Biological sciences	177	11	60	25	1	4
Biology	40	10	65	18	0	8
Botany	12	42	67	0	0	0
Zoology	22	41	27	27	0	9
Biochemistry	51	0	67	29	2	0
Microbiology	26	4	69	27	0	0
Physiology	26	0	54	38	0	8
Mathematical and computer sciences	139	41	10	38	1	11
Mathematics	129	39	11	40	1	11
Computer science	10	70	0	20	0	10
Social sciences	176	49	1	43	3	3
Economics	79	62	1	32	3	3
Political science	49	45	2	45	4	4
Sociology	48	33	0	60	2	2
Psychology	62	40	18	35	3	5

* In total Federal obligations to institutions for research and development activities, FY 1977.

Source: National Science Foundation

Table B-37. Full-time tenured and nontenured faculty who left their positions in surveyed departments in 1978-79, by reason for departure and field

Field	Departing faculty with tenure (number)	Reasons for departure of tenured faculty						
		Retirement	Illness or death	Voluntary resignation			Involuntary resignation	
				To take another academic position	To take a nonacademic positions	Other reasons	Failure to receive tenure	Other reasons
All fields	1,028	42	8	31	15	3	0	1
Engineering	260	40	8	26	24	2	0	0
Chemical	33	42	18	24	15	0	0	0
Civil	74	49	5	43	19	1	0	0
Electrical	86	42	7	20	30	1	0	1
Mechanical	67	28	6	34	25	3	0	0
Physical sciences	211	44	9	24	18	5	0	1
Chemical	92	52	8	18	16	5	0	1
Geology	43	35	9	26	30	5	0	1
Physics	76	38	12	29	14	7	0	3
Biological sciences	192	51	8	26	10	2	0	3
Biology	38	50	3	29	5	11	0	3
Botany	20	50	10	30	10	0	0	0
Zoology	31	52	6	16	13	0	0	13
Biochemistry	43	58	9	23	7	0	0	0
Microbiology	32	53	13	25	9	0	0	0
Physiology	28	39	11	32	18	0	0	0
Mathematical and computer sciences	113	32	11	44	12	4	0	0
Mathematics	83	40	12	37	8	5	0	0
Computer science	30	10	7	63	20	20	0	0
Social sciences	179	43	6	36	8	5	0	0
Economics	84	44	7	31	12	5	0	1
Political science	53	42	0	43	2	9	0	2
Sociology	42	43	10	38	10	0	0	0
Psychology	73	30	4	48	12	5	0	1

Source: National Science Foundation

Table B-37. Full-time tenured and nontenured faculty who left their positions in surveyed departments in 1978-79 by reason for department and field -- con.

Field	Departing faculty without tenure (number)	Reasons for departure of "nontenured" faculty (percent)						
				Voluntary resignation			Involuntary resignation	
		Retirement	Illness or death	To take another academic position	To take a nonacademic positions	Other reasons	Failure to receive tenure	Other reasons
All fields	1,131	0	1	36	24	8	24	8
Engineering	193	0	1	39	34	11	12	3
Chemical	30	0	3	30	37	7	17	3
Civil	59	0	2	53	25	8	7	7
Electrical	48	0	0	31	42	10	15	2
Mechanical	56	0	0	38	34	16	13	0
Physical sciences	134	0	2	16	31	11	34	6
Chemical	53	0	2	11	23	23	36	6
Geology	22	0	9	32	23	2	23	9
Physics	59	0	0	15	41	3	37	5
Biological sciences	235	0	1	38	18	9	29	8
Biology	76	0	1	39	7	4	41	8
Botany	16	0	0	50	13	13	19	6
Zoology	33	0	0	36	9	18	27	12
Biochemistry	36	0	0	33	15	22	31	0
Microbiology	36	0	3	39	42	3	6	8
Physiology	38	0	0	34	29	0	29	11
Mathematical and computer sciences	221	0	2	37	24	5	19	13
Mathematics	184	0	3	37	19	5	21	16
Computer science	37	0	0	35	46	8	14	0
Social sciences	237	0	1	41	16	6	24	11
Economics	100	0	2	47	23	6	13	7
Political science	68	0	0	31	10	12	37	9
Sociology	69	0	0	42	12	1	26	19
Psychology	111	0	1	39	26	2	28	4

Source: National Science Foundation

Table B-38. Research proposals submitted during 1978-79 by full-time recent, senior, and nondoctorate faculty in surveyed departments, by proposal disposition and field

Field	All faculty				Recent doctorates *				Senior doctorates				Nondoctorates			
	Proposals submitted (number)	** Percent funded	Percent denied	Percent not acted on	Proposals submitted (number)	Percent funded	Percent denied	Percent not acted on	Proposals submitted (number)	Percent funded	Percent denied	Percent not acted on	Proposals submitted (number)	Percent funded	Percent denied	Percent not acted on
All fields	34,050	64	25	11	7,672	58	28	13	25,962	66	24	11	416	66	21	13
Engineering	8,416	58	28	15	1,989	48	34	18	6,153	61	25	14	274	65	24	11
Chemical	1,518	55	29	16	373	50	32	19	1,133	57	28	15	12	50	17	33
Civil	2,616	55	31	15	756	49	40	16	1,714	59	27	14	146	60	28	12
Electrical	2,142	60	25	16	421	48	32	20	1,684	63	23	15	37	70	22	8
Mechanical	2,140	62	26	12	439	54	29	17	1,622	64	25	11	79	73	20	6
Physical sciences	9,562	67	24	10	1,624	62	24	13	7,898	69	22	9	40	60	18	22
Chemistry	4,886	63	28	11	945	61	25	15	3,938	64	27	10	3	***	***	***
Geology	1,858	72	19	9	369	64	24	12	1,467	74	18	8	22	73	9	18
Physics	2,818	72	18	10	310	65	24	11	2,493	73	17	10	15	33	33	33
Biological sciences	8,814	66	23	11	1,872	65	22	13	6,913	67	23	11	29	79	14	7
Biology	2,413	61	26	13	508	59	26	15	1,899	61	26	12	16	81	19	0
Botany	668	68	24	8	143	64	27	9	525	69	23	8	0	***	***	***
Zoology	682	74	16	10	163	65	21	13	519	76	19	12	0	***	***	***
Biochemistry	1,981	67	21	12	377	65	18	18	1,603	68	22	11	1	***	***	***
Microbiology	1,528	65	24	11	290	69	19	12	1,235	64	25	11	3	***	***	***
Physiology	1,542	71	20	9	391	70	22	8	1,142	71	20	9	9	***	***	***
Mathematical and computer sciences	2,333	67	24	9	638	59	31	11	1,688	71	21	8	7	57	28	14
Mathematics	1,749	68	24	8	445	59	32	9	1,301	71	22	8	3	***	***	***
Computer science	584	66	21	13	193	59	26	15	387	70	19	12	4	***	***	***
Social sciences	2,934	62	28	10	977	61	30	9	1,901	63	28	10	56	75	9	16
Economics	1,040	63	27	11	326	55	34	10	688	66	23	11	26	69	12	19
Political science	850	65	26	9	283	66	26	8	554	65	26	9	13	85	0	15
Sociology	1,044	59	32	9	368	61	30	8	659	58	33	9	17	76	12	12
Psychology	1,986	62	28	10	570	59	30	11	1,406	64	27	9	10	50	30	20

*Faculty who have held doctorates seven years or less.

**In this table only, percents of proposals funded are based on total number of proposals submitted, including those not acted on by spring 1980.

***Percentage was not calculated when number of proposals submitted for an individual field or group was less than 10.

Source: National Science Foundation

Table B-39. Number of research proposals submitted per person during 1978-79 by full-time recent, senior, and nondoctorate faculty in surveyed departments, and percent of proposals funded, by field

Field	All faculty			Recent doctorates*			Senior doctorates			Nondoctorates		
	Number of faculty	Number sub-mitted per person	** Percent funded	Number of faculty	Number sub-mitted per person	Percent funded	Number of faculty	Number sub-mitted per person	Percent funded	Number of faculty	Number sub-mitted per person	Percent funded
All fields	39,760	.88	72	8,445	.93	67	29,477	.90	73	1,838	.24	76
Engineering	7,236	1.19	68	1,423	1.44	58	5,032	1.25	70	781	.36	73
Chemical	1,039	1.49	66	234	1.61	61	759	1.52	67	46	.30	***
Civil	1,886	1.42	64	405	1.89	53	1,213	1.46	69	268	.56	68
Electrical	2,313	.95	71	405	1.08	60	1,729	1.00	74	179	.21	76
Mechanical	1,998	1.10	71	379	1.23	65	1,331	1.24	72	288	.28	78
Physical sciences	8,354	1.16	75	1,192	1.37	72	7,026	1.14	76	136	.30	77
Chemistry	3,380	1.47	71	536	1.80	71	2,787	1.44	70	57	.05	***
Geology	1,394	1.35	79	268	1.39	73	1,098	1.36	80	28	.79	89
Physics	3,580	.79	80	388	.79	73	3,141	.80	81	51	.30	50
Biological sciences	8,768	1.02	74	1,687	1.12	74	6,828	1.02	74	253	.12	85
Biology	2,400	1.01	70	469	1.08	69	1,880	1.02	70	51	.32	81
Botany	832	.81	74	164	.87	70	618	.85	75	50	.00	***
Zoology	1,005	.72	82	235	.74	75	702	.78	84	68	.00	***
Biochemistry	1,676	1.18	76	241	1.56	78	1,416	1.13	76	19	.05	***
Microbiology	1,415	1.08	73	251	1.16	79	1,120	1.10	72	43	.07	***
Physiology	1,441	1.09	78	327	1.20	76	1,092	1.07	78	22	.41	***
Mathematical and computer sciences	5,325	.45	74	1,298	.50	66	3,712	.47	77	315	.02	
Mathematics	4,485	.40	73	988	.46	64	3,251	.41	77	246	.01	***
Computer science	840	.70	76	310	.63	69	461	.84	79	69	.06	***
Social sciences	6,704	.46	69	1,935	.52	67	4,459	.45	69	310	.19	84
Economics	2,517	.43	70	762	.44	62	1,588	.45	74	167	.16	86
Political science	2,20	.40	72	565	.50	72	1,576	.37	71	63	.22	100
Sociology	1,983	.55	65	608	.63	67	1,295	.53	63	80	.22	87
Psychology	3,373	.60	69	910	.64	66	2,420	.59	71	43	.25	***

*Faculty who have held doctorates seven years or less.

**Percents are based on total number of proposals funded and denied by spring 1980.

***Percentage of proposals funded was not calculated when number of proposals for an individual field or group was less than 10.

Source: National Science Foundation

Table B-40. Number of research proposals submitted per person during 1978-79 by full-time recent and senior nonfaculty research doctorates in surveyed departments, and percent of proposals funded, by field

Field	All nonfaculty			Recent doctorates *			Senior doctorates		
	Number of non-faculty	Number submitted per person	** Percent funded	Number of non-faculty	Number submitted per person	Percent funded	Number of non-faculty	Number submitted per person	Percent funded
All fields	4,178	.21	75	3,013	.16	77	1,165	.33	73
Engineering	470	.30	76	330	.18	86	141	.55	69
Chemical	101	.39	100	83	.40	100	18	.33	***
Civil	97	.26	72	71	.00	***	26	.96	72
Electrical	148	.29	76	106	.25	77	42	.38	75
Mechanical	124	.27	56	70	.03	***	55	.56	56
Physical sciences	1,606	.22	71	1,131	.12	74	475	.45	68
Chemistry	701	.08	58	549	.04	62	152	.23	56
Geology	236	1.04	72	153	.66	73	83	1.73	70
Physics	669	.08	78	429	.05	94	240	.15	70
Biological sciences	1,820	.16	78	1,349	.17	76	471	.12	86
Biology	412	.32	76	279	.38	76	132	.18	78
Botany	93	.12	91	75	.05	***	18	.35	***
Zoology	75	.33	84	66	.35	83	10	.20	***
Biochemistry	659	.06	67	514	.06	63	145	.05	***
Microbiology	263	.11	86	194	.13	84	69	.04	***
Physiology	318	.19	80	221	.19	74	97	.18	94
Mathematical and computer sciences	94	.24	86	57	.33	83	36	.11	***
Mathematics	35	.17	***	18	.22	***	16	.12	***
Computer science	59	.29	81	39	.38	79	20	.10	***
Social sciences	57	.12	***	44	.05	77	13	.31	***
Economics	14	.07	***	6	.00	***	8	.12	***
Political science	11	.36	***	8	.00	***	3	1.33	***
Sociology	32	.06	***	30	.07	***	2	.00	***
Psychology	131	.34	80	102	.24	78	29	.72	81

*Nonfaculty who have held doctorates seven years or less.

**Percents are based on total number of proposals funded and denied by spring 1980.

***Percentage of proposals funded was not calculated when number of proposals for an individual field or group was less than 10.

Source: National Science Foundation

Table B-41. Number of research proposals submitted per person during 1978-79 by full-time faculty in surveyed departments, and percent of proposals funded, by control of institution

Field	Public institutions			Private institutions		
	Number of faculty	Number sub-mitted per person	Percent funded*	Number of faculty	Number sub-mitted per person	Percent funded
All fields	29,233	.88	71	10,527**	.89	76
Engineering	5,465	1.20	66	1,771	1.18	72
Chemical	769	1.54	67	270	1.36	62
Civil	1,503	1.48	63	383	1.23	68
Electrical	1,715	.93	68	598	1.01	78
Mechanical	1,478	1.05	69	520	1.24	75
Physical sciences	6,130	1.14	73	2,224	1.22	80
Chemistry	2,495	1.47	69	884	1.49	75
Geology	1,040	1.21	76	354	1.78	84
Physics	2,595	.80	79	986	.78	83
Biological sciences	6,519	1.01	73	2,249**	1.04	79
Biology	1,534	1.09	68	866	.87	74
Botany	798	.78	73	-	-	-
Zoology	980	.71	81	-	-	-
Biochemistry	1,178	1.17	72	498	1.22	86
Microbiology	1,019	1.04	74	395	1.19	72
Physiology	1,010	1.11	76	431	1.05	81
Mathematics and computer sciences	4,044	.42	71	1,281	.53	81
Mathematics	3,441	.38	71	1,044	.46	80
Computer science	603	.67	73	237	.78	83
Social sciences	4,600	.45	68	2,104	.46	71
Economics	1,695	.42	70	822	.44	71
Political science	1,457	.42	69	748	.37	78
Sociology	1,448	.53	66	534	.61	64
Psychology	2,475	.59	69	898	.61	71

*Percents are based on total number of proposals funded and denied by spring 1980.

**Includes botany and zoology, which are not reported separately because of the small numbers of departments in private institutions.

Source: National Science Foundation

Table B-42. Number of research proposals submitted per person during 1978-79 by full-time nonfaculty research doctorates in surveyed departments, and percent funded, by control of institution and field

Field	Public institutions			Private institutions		
	Number of non-faculty	Number sub-mitted per person	Percent funded *	Number of non-faculty	Number sub-mitted per person	Percent funded
All fields	2,324	.20	74	1,854 **	.21	76
Engineering	247	.30	81	223	.29	68
Chemical	70	.17	100	31	.81	100
Civil	44	.50	77	53	.06	***
Electrical	67	.36	78	81	.23	73
Mechanical	66	.23	79	58	.31	31
Physical sciences	900	.16	67	706	.30	73
Chemistry	372	.09	41	329	.06	89
Geology	75	1.05	73	161	1.02	71
Physics	453	.07	85	216	.11	68
Biological sciences	1,058	.21	76	762**	.08	86
Biology	241	.42	72	171	.16	93
Botany	85	.13	91	-	-	-
Zoology	71	.35	84	-	-	-
Biochemistry	289	.08	57	370	.04	83
Microbiology	160	.13	94	103	.06	***
Physiology	212	.21	78	106	.14	86
Mathematical and computer sciences	32	.12	***	62	.31	84
Mathematics	8	.00	***	27	.22	***
Computer science	24	.17	***	35	.37	77
Social sciences	24	.04	***	33	.18	***
Economics	7	.00	***	7	.12	***
Political science	2	.00	***	9	.44	***
Sociology	15	.07	***	17	.06	***
Psychology	63	.29	76	68	.38	81

*Percents are based on total number of proposals funded and denied by spring 1980.

**Includes botany and zoology, which are not reported separately because of the small numbers of departments in private institutions.

***Percentage of proposals funded was not calculated when number of proposals for an individual field or group was less than 10.

Source: National Science Foundation

Table B-43. Number of research proposals submitted per person during 1978-79 by full-time faculty in surveyed departments, and percent of proposals funded, by Roose-Andersen department rating and field

Field	Roose-Andersen rating					
	Distinguished or strong			All others and not rated		
	Number of faculty	Number sub-mitted per person	Percent funded*	Number of faculty	Number sub-mitted per person	Percent funded
All fields**	10,863	1.07	81	25,657	.79	67
Engineering	2,188	1.38	74	5,048	1.12	64
Chemical	265	1.78	70	774	1.40	64
Civil	491	1.63	70	1,395	1.35	61
Electrical	863	1.02	74	1,450	.91	69
Mechanical	569	1.52	78	1,429	.93	65
Physical sciences	2,807	1.44	84	5,547	1.02	68
Chemistry	1,139	1.95	80	2,241	1.23	63
Geology	465	1.79	85	929	1.13	74
Physics	1,203	.82	92	2,377	.77	73
Biological sciences	1,986	1.16	83	4,382	.96	72
Biology**	-	-	-	-	-	-
Botany	257	1.05	74	575	.70	75
Zoology	239	.92	86	766	.65	80
Biochemistry	575	1.25	86	1,101	1.14	70
Microbiology	431	1.13	83	983	1.06	69
Physiology	484	1.23	84	957	1.03	74
Mathematical and computer sciences						
Mathematics	1,023	.55	89	3,462	.36	66
Computer science**	-	-	-	-	-	-
Social sciences	1,718	.49	77	4,986	.44	66
Economics	562	.43	83	1,954	.42	67
Political science	719	.44	77	1,436	.39	69
Sociology	437	.64	73	1,546	.52	63
Psychology	1,141	.74	77	2,232	.54	64

*Percents are based on total number of proposals funded and denied by spring 1980.

**Biology and computer science departments were not rated in the Roose-Andersen survey.

Source: National Science Foundation

Table B-44. Number of research proposals submitted per person during 1978-79 by full-time nonfaculty research doctorates in surveyed departments, and percent of proposals funded, by Roose-Andersen department rating and field

Field	Roose-Andersen rating					
	Distinguished or strong			All others and not rated		
	Number of non-faculty	Number sub-mitted per person	Percent funded*	Number of non-faculty	Number sub-mitted per person	Percent funded
All fields**	1,917	.20	77	1,790	.19	72
Engineering	226	.31	84	244	.29	67
Chemical	15	.60	***	86	.35	100
Civil	44	.36	94	53	.17	***
Electrical	92	.25	79	56	.36	74
Mechanical	75	.29	76	49	.22	20
Physical sciences	823	.24	73	783	.20	66
Chemistry	311	.07	81	390	.08	41
Geology	157	1.02	72	79	1.08	71
Physics	355	.05	71	314	.13	79
Biological sciences	737	.09	76	671	.14	82
Biology**	-	-	-	-	-	-
Botany	53	.00	***	40	.28	91
Zoology	49	.29	79	26	.42	91
Biochemistry	354	.03	71	305	.09	65
Microbiology	139	.03	***	124	.20	90
Physiology	142	.27	78	176	.12	84
Mathematical and computer sciences	26	.23	***	9	.00	***
Mathematics	26	.23	***	9	.00	***
Computer science**	-	-	-	-	-	-
Social sciences	25	.08	***	32	.15	***
Economics	7	.00	***	7	.12	***
Political science	5	.20	***	6	.50	***
Sociology	13	.08	***	19	.05	***
Psychology	81	.40	77	50	.24	83

*Percents are based on total number of proposals funded and denied by spring 1980.

**Biology and computer science departments were not rated in the Roose-Andersen survey.

***Percentage of proposals funded was not calculated when number of proposals for an individual field or group was less than 10.

Source: National Science Foundation

Table B-45. Number of research proposals submitted per person during 1978-79 by full-time faculty in surveyed departments, and percent funded, by level of institutional funding from Federal R&D sources and field

Field	R & D funding level								
	First 50 * institutions			Second 50 institutions			Remaining institutions		
	Number of faculty	Number sub-mitted per person	Percent funded**	Number of faculty	Number sub-mitted per person	Percent funded	Number of faculty	Number sub-mitted per person	Percent funded
All fields	17,917	1.01	77	10,784	.79	67	11,059	.77	67
Engineering	3,343	1.32	72	1,802	1.23	65	2,091	.97	62
Chemical	427	1.62	72	275	1.45	58	337	1.36	63
Civil	853	1.68	66	509	1.35	63	524	1.08	59
Electrical	1,134	1.00	75	569	1.07	70	610	.76	63
Mechanical	929	1.24	76	449	1.14	67	620	.86	61
Physical sciences	3,677	1.52	81	2,245	.96	67	2,432	.98	69
Chemistry	1,319	1.97	76	997	1.19	65	1,064	1.09	63
Geology	670	1.56	81	327	1.03	78	396	1.25	74
Physics	1,686	.88	88	921	.67	66	972	.75	76
Biological sciences	3,842	1.10	78	2,389	.94	71	2,537	.92	71
Biology	854	1.00	72	676	1.08	69	870	.97	68
Botany	390	.82	73	163	.65	67	279	.88	79
Zoology	365	.80	83	208	.80	85	432	.63	79
Biochemistry	845	1.33	80	466	.94	74	365	1.14	69
Microbiology	700	1.25	78	446	.94	63	268	.88	72
Physiology	688	1.18	83	430	.98	74	323	1.06	66
Mathematical and computer sciences	2,422	.54	81	1,397	.40	64	1,506	.34	69
Mathematics	1,868	.48	82	1,229	.38	63	1,388	.32	68
Computer science	554	.76	78	168	.55	65	118	.55	74
Social sciences	3,097	.47	72	2,010	.40	71	1,597	.42	54
Economics	1,165	.46	77	765	.40	69	586	.40	51
Political science	1,066	.42	73	576	.38	76	564	.40	59
Sociology	866	.61	67	669	.46	69	447	.56	52
Psychology	1,536	.68	73	941	.54	68	896	.55	59

* In total Federal obligations to institutions for research and development activities, FY 1977.

** Percents are based on total number of proposals funded and denied by spring 1980

Source: National Science Foundation

Table B-46. Number of research proposals submitted per person during 1978-79 by full-time nonfaculty research doctorates in surveyed departments, and percent of proposals funded, by level of total Federal R&D obligations to institution and field

Field	R & D funding level								
	First 50 institutions *			Second 50 institutions			Remaining institutions		
	Number of non-faculty	Number sub-mitted per person	** Percent funded	Number of non-faculty	Number sub-mitted per person	Percent funded	Number of non-faculty	Number sub-mitted per person	Percent funded
All fields	2,569	.19	78	804	.19	73	805	.27	69
Engineering	267	.38	85	102	.08	***	101	.29	48
Chemical	42	.83	100	24	.00	***	3	.11	***
Civil	50	.40	75	26	.19	***	21	.00	***
Electrical	109	.26	84	18	.00	***	21	.67	58
Mechanical	66	.28	79	34	.09	***	2	.48	20
Physical sciences	974	.22	75	322	.12	70	310	.34	60
Chemistry	361	.06	89	178	.06	44	162	.14	36
Geology	169	1.01	73	30	.67	72	37	1.43	69
Physics	444	.05	78	114	.07	***	111	.26	68
Biological sciences	1,151	.11	78	302	.28	74	367	.21	82
Biology	252	.15	80	59	.76	70	101	.48	79
Botany	57	.02	***	9	.10	***	27	.33	***
Zoology	53	.26	79	1	.00	***	21	.33	***
Biochemistry	411	.06	57	102	.09	***	146	.02	***
Microbiology	200	.09	88	29	.17	***	34	.16	***
Physiology	178	.20	84	102	.21	70	38	.08	***
Mathematical and computer sciences	58	.09	***	34	.35	75	2	.00	***
Mathematics	31	.20	***	2	.00	***	2	.00	***
Computer science	27	.19	***	32	.38	75	0	.00	***
Social sciences	33	.54	***	13	.00	***	11	.36	***
Economics	9	.10	***	5	.00	***	0	.00	***
Political science	4	.20	***	2	.00	***	5	.60	***
Sociology	20	.05	***	6	.00	***	6	.17	***
Psychology	86	.40	76	31	.19	***	14	.36	***

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* In total Federal obligations to institutions for research and development activities, FY 1977.

** Percents are based on total number of proposals funded and denied by spring 1980.

*** Percentage of proposals funded was not calculated when number of proposals for an individual field or group was less than 10.

Table B-47. Number of research proposals submitted per person during 1978-79 by full-time faculty in surveyed departments, and percent funded, by graduate enrollment and field

Field	Graduate enrollment*											
	90 or more students			50-89 students			30-49 students			Fewer than 30 students		
	Number of faculty	Number sub-mitted per person	** Percent funded	Number of faculty	Number sub-mitted per person	Percent funded	Number of faculty	Number sub-mitted per person	Percent funded	Number of faculty	Number sub-mitted per person	Percent funded
All fields	13,403	1.01	73	10,723	.79	72	8,001	.85	72	7,633	.79	71
Engineering	3,475	1.28	70	1,936	1.12	66	1,049	1.15	66	775	1.07	62
Chemical	239	1.90	67	305	1.27	70	318	1.43	63	177	1.41	62
Civil	1,010	1.54	68	509	1.48	55	204	1.23	62	163	.80	69
Electrical	1,460	.95	72	409	.95	71	279	.89	74	164	1.10	63
Mechanical	766	1.36	73	713	.90	73	248	1.00	69	271	1.00	55
Physical sciences	2,927	1.48	78	2,671	1.05	73	1,659	1.01	75	1,098	.78	65
Chemistry	1,672	1.51	74	1,027	1.18	66	446	.97	64	235	1.13	62
Geology	244	1.57	82	671	1.37	77	319	1.33	83	161	.98	72
Physics	1,011	.90	89	971	.70	81	894	.90	76	702	.63	63
Biological sciences	1,205	1.21	69	1,784	.92	79	2,096	1.08	73	3,683	.97	75
Biology	871	1.31	67	605	.80	74	544	1.07	71	380	.58	72
Botany	10	1.40	50	231	1.15	74	244	.68	71	347	.66	78
Zoology	126	1.11	77	512	.69	84	241	.48	83	126	.81	81
Biochemistry	77	1.00	88	165	.85	88	395	1.47	78	1,039	1.14	73
Microbiology	85	.46	67	245	1.44	80	400	1.04	69	684	1.05	73
Physiology	36	1.28	85	26	1.46	78	272	1.39	73	1,107	1.00	79
Mathematical and computer sciences	1,420	.59	80	1,391	.40	71	1,564	.46	71	950	.30	68
Mathematics	970	.49	83	1,135	.36	71	1,476	.44	70	904	.30	68
Computer science	450	.79	77	256	.59	72	88	.76	76	46	.30	77
Social sciences	2,291	.54	70	2,167	.38	70	1,354	.46	70	892	.41	59
Economics	1,072	.49	70	904	.43	70	314	.30	77	227	.27	62
Political science	790	.55	73	738	.26	76	367	.45	66	309	.31	70
Sociology	429	.62	68	525	.48	65	673	.55	69	356	.58	53
Psychology	2,085	.56	69	774	.59	70	279	.90	69	235	.64	72

*Full- and part-time.

**Percents are based on total number of proposals funded and denied by spring 1980.

Source: National Science Foundation

Table B-48. Number of research proposals submitted per person during 1978-79 by full-time nonfaculty research doctorates in surveyed departments, and percent of proposals funded, by graduate enrollment and field

Field	Graduate enrollment*											
	90 or more students			50-89 students			30-49 students			Fewer than 30 students		
	Number of non-faculty	Number sub-mitted per person	** Percent funded	Number of non-faculty	Number sub-mitted per person	Percent funded	Number of non-faculty	Number sub-mitted per person	Percent funded	Number of non-faculty	Number sub-mitted per person	Percent funded
All fields	1,567	.25	73	865	.19	74	815	.23	75	931	.14	83
Engineering	260	.31	72	106	.22	63	61	.12	***	43	.63	88
Chemical	22	.00	***	24	.38	***	33	.30	***	22	1.09	100
Civil	67	.30	85	20	.20	***	7	.14	***	3	.00	***
Electrical	115	.29	79	17	.41	***	8	.00	***	8	.25	***
Mechanical	56	.51	52	45	.07	***	13	.00	***	10	.10	***
Physical sciences	910	.22	71	368	.20	76	243	.29	67	85	.15	50
Chemistry	412	.06	74	200	.02	***	72	.32	35	17	.00	***
Geology	129	1.19	69	56	1.12	74	45	.60	81	6	.00	***
Physics	369	.05	81	112	.04	***	126	.16	93	62	.21	50
Biological sciences	266	.28	72	322	.13	68	449	.19	80	783	.12	87
Biology	206	.32	70	106	.13	69	67	.60	85	33	.33	***
Botany	1	1.00	***	28	.11	***	29	.03	***	35	.17	***
Zoology	17	.24	***	53	.28	73	3	1.67	***	2	1.00	***
Biochemistry	31	.00	***	52	.00	***	223	.10	47	353	.04	93
Microbiology	3	.00	***	63	.03	***	91	.11	100	106	.16	80
Physiology	8	.62	***	20	.45	***	36	.14	***	254	.16	84
Mathematical and computer sciences	40	.23	***	34	.32	73	20	.15	***	0	.00	***
Mathematics	22	.14	***	5	.00	***	8	.38	***	0	.00	***
Computer science	18	.33	***	29	.38	73	12	.00	***	0	.00	***
Social sciences	26	.19	***	11	.09	***	13	.08	***	7	.00	***
Economics	11	.08	***	0	.00	***	3	.00	***	0	.00	***
Political science	6	.50	***	4	.00	***	1	1.00	***	0	.00	***
Sociology	9	.11	***	7	.14	***	9	.00	***	7	.00	***
Psychology	64	.27	88	25	.40	100	29	.55	63	13	.23	***

*Full-and part-time.

**Percents are based on total number of proposals funded and denied by spring 1980.

***Percentage of proposals funded was not calculated when number of proposals for an individual field or group was less than 10.

Source: National Science Foundation

Table B-49. Participation in research at industrial and Federal laboratories by full-time recent and senior faculty active in research in surveyed departments by field: Spring 1980

Field	All faculty active in research* (number)		Industrial labs				Federal labs			
			Recent doctorates		Senior doctorates		Recent doctorates		Senior doctorates	
	** Recent	Senior	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers
All fields	7,463	23,72	157	2	639	3	385	5	1,597	7
Engineering	1,169	3,423	78	7	294	9	113	10	348	10
Chemical	213	584	16	8	53	9	24	11	62	11
Civil	325	802	5	2	44	5	19	6	55	7
Electrical	334	1,158	34	10	143	12	38	11	114	10
Mechanical	297	879	23	8	54	6	32	11	117	13
Physical sciences	1,102	5,996	25	2	190	3	147	13	892	15
Chemistry	476	2,330	5	1	61	3	31	7	176	8
Geology	246	913	8	3	34	4	28	11	97	11
Physics	380	2,753	12	3	95	3	88	23	619	22
Biological sciences	1,513	5,953	11	1	53	1	50	3	162	3
Biology	414	1,565	8	2	7	0	5	1	16	1
Botany	136	509	0	0	4	1	7	5	16	3
Zoology	176	529	0	0	1	0	7	4	29	5
Biochemistry	233	1,340	0	0	10	1	16	7	44	3
Microbiology	241	1,023	0	0	11	1	11	5	28	3
Physiology	313	987	3	1	20	2	4	1	29	3
Mathematical and computer sciences	1,150	2,913	31	3	65	2	53	5	128	4
Mathematics	876	2,541	8	1	24	1	26	3	84	3
Computer science	274	372	23	8	41	11	27	10	44	12
Social sciences	1,689	3,488	10	1	21	1	16	1	31	1
Economics	685	1,298	10	1	9	1	7	1	11	1
Political science	478	1,157	0	0	4	0	4	1	11	1
Sociology	526	1,033	0	0	8	1	5	1	9	1
Psychology	840	1,956	2	0	16	1	6	1	36	2

*Faculty spending 20 percent or more time in research.

**Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-50. Participation in research at industrial and Federal laboratories by full-time faculty active in research in surveyed departments by control of institution and field: Spring 1980

Field	All faculty * active in research (number)		Industrial labs				Federal labs			
			Public institutions		Private institutions		Public institutions		Private institutions	
	Public institutions	Private institutions	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers
All fields	22,538	8,652**	551	3	245**	3	1,402	6	580**	7
Engineering	3,348	1,244	255	8	117	9	318	9	143	11
Chemical	583	214	54	9	15	7	67	11	19	9
Civil	865	262	26	3	23	9	60	7	14	5
Electrical	1,073	419	128	12	49	12	112	10	40	10
Mechanical	827	349	47	6	30	9	79	10	70	20
Physical sciences	5,177	1,921	168	3	47	2	724	14	315	16
Chemistry	2,051	754	57	3	9	1	171	8	36	5
Geology	851	308	41	5	1	0	108	13	17	6
Physics	2,275	859	70	3	37	4	445	20	262	31
Biological sciences	5,476	1,988**	49	1	15**	1	159	2	53**	3
Biology	1,255	724	11	1	4	1	13	1	8	1
Botany	617	-	4	1	-	-	23	4	-	-
Zoology	687	-	1	0	-	-	36	5	-	-
Biochemistry	1,091	482	9	1	1	0	41	4	19	4
Microbiology	896	367	6	1	5	1	22	2	17	5
Physiology	930	370	18	2	5	1	24	3	9	2
Mathematical and computer sciences	3,044	1,019	60	2	36	4	123	4	58	6
Mathematics	2,585	832	22	1	10	1	91	4	19	2
Computer science	459	187	38	8	26	14	32	7	39	21
Social sciences	3,463	1,714	10	0	21	1	42	1	5	0
Economics	1,322	660	5	0	14	2	16	1	2	0
Political science	1,030	606	1	0	3	0	12	1	3	0
Sociology	1,111	448	4	0	4	1	14	1	0	0
Psychology	2,030	766	9	0	9	1	36	2	6	1

*Faculty spending 20 percent or more time in research.

**Includes botany and zoology, which are not separately reported because of the small numbers of departments in private institutions.

Source: National Science Foundation

Table B-51. Participation in research at industrial and Federal laboratories by full-time faculty active in research in surveyed departments by Roose-Andersen department rating and field: Spring 1980

Field	Roose-Andersen rating									
	All faculty* active in research (number)		Industrial labs				Federal labs			
			Distinguished or strong		All others and not rated		Distinguished or strong		All others and not rated	
	Distinguished or strong	All others and not rated	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers
All fields**	9,193	19,374	190	2	525	3	648	7	1,228	7
Engineering	1,532	3,060	123	8	249	8	148	10	312	10
Chemical	212	585	10	5	59	10	18	8	68	12
Civil	336	791	20	6	29	4	12	4	61	8
Electrical	635	857	57	9	120	14	43	7	110	13
Mechanical	349	827	36	10	41	5	75	21	73	9
Physical sciences	2,616	4,482	48	2	165	4	439	17	586	13
Chemistry	1,037	1,769	20	2	46	3	110	11	97	5
Geology	441	718	7	2	36	5	25	6	100	14
Physics	1,138	1,995	21	2	83	4	304	27	389	20
Biological sciences	1,783	3,704	6	0	43	1	27	2	165	5
Biology**	-	-	-	-	-	-	-	-	-	-
Botany	208	437	0	0	4	1	1	0	22	5
Zoology	211	494	1	0	0	0	4	2	32	6
Biochemistry	561	1,012	3	1	7	1	7	1	54	5
Microbiology	385	879	1	0	10	1	11	3	29	3
Physiology	418	882	1	0	22	2	4	1	28	3
Mathematical and computer sciences	913	2,504	1	0	31	1	14	2	97	4
Mathematics	913	2,504	1	0	31	1	14	2	97	4
Computer science**	-	-	-	-	-	-	-	-	-	-
Social sciences	1,398	3,779	11	1	20	1	12	1	34	1
Economics	471	1,512	5	1	14	1	3	1	15	1
Political science	548	1,087	3	1	1	0	9	2	5	0
Sociology	379	1,180	3	1	5	0	0	0	14	1
Psychology	951	1,845	1	0	17	1	8	1	34	2

*Faculty spending 20 percent or more time in research.

**Biology and computer science departments were not rated in the Roose-Andersen survey.

Source: National Science Foundation

Table B-52. Participation in research at industrial and Federal laboratories by full-time faculty active in research in surveyed departments by level of total Federal R&D obligations to institution and field: Spring 1980

Field	R & D funding level									
	All faculty active in research * (number)		Industrial labs				Federal labs			
			First 50 ** institutions		All other institutions		First 50 institutions		All other institutions	
	First 50 institutions	All other institutions	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers	Number of participants	Percent of active researchers
All fields	14,843	16,349	331	2	468	3	878	6	1,090	7
Engineering	2,312	2,280	181	8	193	9	206	9	255	11
Chemical	337	460	24	7	46	10	33	10	53	12
Civil	548	579	29	5	21	4	23	4	51	9
Electrical	830	662	75	9	102	16	56	7	97	15
Mechanical	597	579	53	9	24	4	94	16	54	9
Physical sciences	3,309	3,789	61	2	153	4	481	15	543	15
Chemistry	1,181	1,625	20	2	47	3	102	9	104	6
Geology	582	577	9	2	34	6	35	6	90	16
Physics	1,546	1,587	32	2	72	5	344	22	349	23
Biological sciences	3,383	4,083	13	0	52	1	62	2	152	4
Biology	718	1,261	5	1	10	1	5	1	17	1
Botany	300	345	1	0	3	1	3	1	20	6
Zoology	310	395	1	0	0	0	10	3	26	7
Biochemistry	810	763	3	0	7	1	15	2	46	6
Microbiology	631	633	2	0	10	2	22	3	18	3
Physiology	614	686	1	0	22	3	7	1	25	4
Mathematical and computer sciences	2,018	2,045	56	3	42	2	89	4	92	4
Mathematics	1,572	1,845	8	1	25	1	28	2	81	4
Computer science	446	200	48	11	17	9	61	14	11	6
Social sciences	2,487	2,690	15	1	15	1	30	1	17	1
Economics	963	1,020	4	0	15	1	7	1	12	1
Political science	815	820	4	0	0	0	11	1	3	0
Sociology	709	850	7	1	0	0	12	2	2	0
Psychology	1,334	1,462	5	0	13	1	10	1	31	2

*Faculty spending 20 percent or more time in research.

**In total Federal obligations to institutions for research and development activities, FY 1977.

Source: National Science Foundation

Table B-53. Participation in research at industrial and Federal laboratories by full-time faculty active in research in surveyed departments by graduate enrollment and field: Spring 1980

Field	Graduate enrollment **									
	All faculty active in research* (number)		Industrial labs				Federal labs			
			More than 90 students		90 or fewer students		More than 90 students		90 or fewer students	
	More than 90 students	90 or fewer students	Number of partici-pants	Percent of active researchers	Number of partici-pants	Percent of active researchers	Number of partici-pants	Percent of active researchers	Number of partici-pants	Percent of active researchers
All fields	10,606	20,856	312	3	488	2	681	6	1,303	6
Engineering	2,286	2,306	186	8	187	8	211	9	251	11
Chemical	200	597	10	5	59	10	19	10	68	11
Civil	648	479	32	5	18	4	44	7	29	6
Electrical	979	513	107	11	69	13	65	7	88	17
Mechanical	459	717	37	8	41	6	83	18	66	9
Physical sciences	2,604	4,494	55	2	162	4	332	13	707	16
Chemistry	1,461	1,345	35	2	32	2	134	9	73	5
Geology	194	965	3	2	40	4	11	6	114	12
Physics	949	2,184	17	2	90	4	187	20	520	24
Biological sciences	1,055	6,411	10	1	54	1	21	2	192	3
Biology	752	1,227	9	1	7	1	10	1	11	1
Botany	9	636	0	0	4	1	0	0	24	4
Zoology	107	598	1	1	0	0	8	7	28	5
Biochemistry	75	1,498	0	0	9	1	3	4	57	4
Microbiology	84	1,180	0	0	11	1	0	0	39	3
Physiology	28	1,272	0	0	23	2	0	0	33	3
Mathematical and computer sciences	1,143	2,920	39	3	59	2	70	6	111	4
Mathematics	780	2,637	2	0	31	1	9	1	101	4
Computer science	363	283	37	10	28	10	61	17	10	4
Social sciences	1,828	3,349	8	0	22	1	19	1	28	1
Economics	850	1,133	5	1	13	1	9	1	10	1
Political science	626	1,009	3	0	1	0	10	2	4	0
Sociology	352	1,207	0	0	8	1	0	0	14	1
Psychology	1,690	1,106	14	1	4	0	28	2	14	1

*Faculty spending 20 percent or more time in research.
**Full- and part-time.

Source: National Science Foundation

Table B-54. Full-time faculty in surveyed departments engaged in federally funded research by doctoral status and field: Spring 1980

Field	All faculty		Recent doctorates		Senior doctorates		Nondoctorates	
	Total number	Percent engaged in Federal research	Total number	Percent engaged in Federal research	Total number	Percent engaged in Federal research	Total number	Percent engaged in Federal research
All fields	39,760	53	8,445	49	29,477	56	1,838	17
Engineering	7,236	57	1,423	64	5,032	61	781	21
Chemical	1,039	69	234	69	759	71	46	30
Civil	1,886	57	405	68	1,213	61	268	24
Electrical	2,313	55	405	62	1,729	57	179	20
Mechanical	1,998	54	379	59	1,331	61	288	19
Physical sciences	8,354	66	1,192	64	7,026	67	136	29
Chemistry	3,380	63	536	59	2,787	65	57	32
Geology	1,394	70	268	74	1,098	70	28	54
Physics	3,580	67	388	64	3,141	68	51	12
Biological sciences	8,768	68	1,687	65	6,828	70	253	20
Biology	2,400	58	469	55	1,880	59	51	14
Botany	832	53	164	49	618	58	50	7
Zoology	1,005	49	235	43	702	56	68	5
Biochemistry	1,676	84	241	88	1,416	84	19	37
Microbiology	1,414	77	251	81	1,120	78	43	24
Physiology	1,441	77	327	72	1,092	78	22	77
Mathematical and computer sciences	5,325	42	1,298	39	3,712	46	315	7
Mathematics	4,485	39	988	34	3,251	43	246	5
Computer sciences	840	57	310	55	461	65	69	15
Social sciences	6,704	26	1,935	27	4,459	27	310	7
Economics	2,517	30	762	29	1,588	33	167	6
Political science	2,204	17	565	18	1,576	16	63	12
Sociology	1,983	32	608	34	1,295	33	80	5
Psychology	3,373	40	910	38	2,420	41	43	5

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-55. Full-time nonfaculty research doctorates in surveyed departments engaged in federally funded research by doctoral status and field: Spring 1980

Field	All nonfaculty		Recent doctorates		Senior doctorates	
	Total number	Percent engaged in Federal research	Total number	Percent engaged in Federal research	Total number	Percent engaged in Federal research
All fields	4,178	56	3,015	54	1,163	60
Engineering	470	61	329	61	141	60
Chemical	101	46	83	40	18	67
Civil	97	53	71	55	26	46
Electrical	148	70	106	65	42	71
Mechanical	124	69	69	79	55	55
Physical sciences	1,606	52	1,132	53	474	57
Chemistry	701	40	549	36	152	55
Geology	236	78	153	71	83	89
Physics	669	56	430	61	239	47
Biological sciences	1,820	55	1,350	57	470	58
Biology	412	67	280	69	132	64
Botany	93	51	76	49	17	59
Zoology	75	83	65	72	10	80
Biochemistry	659	39	514	36	145	47
Microbiology	263	68	194	72	69	57
Physiology	318	58	221	54	97	66
Mathematical and computer sciences	94	78	58	81	36	75
Mathematics	35	89	19	83	16	100
Computer science	59	71	39	79	20	55
Social sciences	57	72	44	75	13	62
Economics	14	50	6	**	8	**
Political science	11	100	8	**	3	**
Sociology	32	72	30	70	2	**
Psychology	131	63	102	60	29	72

*Nonfaculty who have held doctorates seven years or less.

**Percentage was not calculated when number of Federally funded investigators was less than 10.

Source: National Science Foundation

Table B-56. Full-time faculty in surveyed departments engaged in federally funded research, by investigator status, doctoral status, and field: Spring 1980

Field	All faculty					Recent doctorates				
	Number engaged in Federal research	Investigator status (percent)				Number engaged in Federal research	Investigator status (percent)			
		Principal investi- gators	Co- principal investi- gators	Other	Inde- pendent		Principal investi- gators	Co- principal investi- gators	Other	Inde- pendent
All fields	20,521	75	13	9	4	4,083	65	15	15	5
Engineering	4,034	74	16	9	2	883	62	19	16	3
Chemical	701	82	10	6	2	160	75	12	11	2
Civil	1,050	71	17	11	1	271	62	22	17	1
Electrical	1,229	71	18	10	1	241	54	23	20	2
Mechanical	1,054	73	15	9	3	211	62	18	14	6
Physical sciences	5,450	75	13	8	4	758	71	11	14	5
Chemistry	2,093	90	5	3	2	308	87	4	7	2
Geology	971	84	12	2	2	197	83	13	3	2
Physics	2,386	58	21	15	6	253	41	18	32	10
Biological sciences	5,856	84	7	6	2	1,088	77	10	11	3
Biology	1,373	90	6	3	2	258	85	8	4	3
Botany	441	81	11	3	6	81	80	7	6	7
Zoology	467	85	10	5	0	95	79	11	10	1
Biochemistry	1,406	87	6	6	2	212	81	8	9	2
Microbiology	1,078	78	9	10	3	203	74	9	13	5
Physiology	1,091	80	8	10	3	239	64	17	19	0
Mathematical and computer sciences	2,175	62	17	9	11	499	51	16	16	17
Mathematics	1,698	62	17	9	12	331	49	12	18	21
Computer science	477	66	20	9	6	168	56	25	12	8
Social sciences	1,691	58	21	16	5	519	40	25	29	5
Economics	727	59	21	16	3	217	41	25	28	6
Political science	353	61	22	15	3	104	38	30	28	4
Sociology	611	56	21	17	7	198	42	22	31	6
Psychology	1,315	84	10	6	1	336	80	9	9	2

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-56. Full-time faculty in surveyed departments engaged in federally funded research, by investigator status, doctoral status, and field: Spring 1980 -- con.

Field	Senior doctorates					Nondoctorates				
	Number engaged in Federal research	Investigator status (percent)				Number engaged in Federal research	Investigator status (percent)			
		Principal investi-gators	Co-principal investi-gators	Other	Inde-pendent		Principal investi-gators	Co-principal investi-gators	Other	Inde-pendent
All fields	16,146	78	12	6	3	292	49	12	27	11
Engineering	2,989	78	14	6	1	162	56	15	27	2
Chemical	529	85	9	3	2	12	47	17	35	0
Civil	717	76	15	8	1	62	60	15	25	0
Electrical	953	76	16	7	1	35	54	17	29	0
Mechanical	790	78	15	6	1	53	56	13	26	6
Physical sciences	4,653	76	13	7	3	39	33	5	2	41
Chemistry	1,767	91	6	3	1	18	6	0	19	76
Geology	759	85	12	1	2	15	57	14	19	10
Physics	2,127	60	21	13	6	6	**	**	**	**
Biological sciences	4,721	86	7	5	2	47	59	8	29	5
Biology	1,108	92	5	2	2	7	**	**	**	**
Botany	357	81	12	2	5	3	**	**	**	**
Zoology	369	87	10	3	0	3	**	**	**	**
Biochemistry	1,187	88	6	5	1	7	**	**	**	**
Microbiology	865	81	9	8	3	10	20	30	30	20
Physiology	835	84	6	7	4	17	89	0	11	0
Mathematical and computer sciences	1,655	67	18	7	9	21	19	0	24	52
Mathematics	1,356	65	18	7	10	11	0	0	34	66
Computer science	299	72	16	7	5	10	45	0	13	42
Social sciences	1,151	67	20	9	4	21	43	14	29	14
Economics	500	68	20	10	2	10	40	0	40	20
Political science	242	71	18	9	3	7	**	**	**	**
Sociology	409	63	20	10	8	4	**	**	**	**
Psychology	977	85	9	5	0	2	**	**	**	**

*Faculty who have held doctorates seven years or less.

**Percentage was not calculated when number of Federally funded investigators was less than 10.

Source: National Science Foundation

Table B-57. Full-time nonfaculty research doctorates in surveyed departments engaged in federally funded research, by investigator status, doctoral status, and field: Spring 1980

Field	All nonfaculty					Recent doctorates				
	Number engaged in Federal research	Investigator status (percent)				Number engaged in Federal research	Investigator status (percent)			
		Principal investigators	Co-principal investigators	Other	Independent		Principal investigators	Co-principal investigators	Other	Independent
All fields	2,319	15	12	69	4	1,634	10	10	76	41
Engineering	285	15	16	65	4	200	5	14	74	6
Chemical	46	15	11	74	0	33	4	10	86	0
Civil	51	10	14	75	0	39	5	16	79	0
Electrical	102	19	12	70	0	73	10	13	77	0
Mechanical	86	12	25	50	14	55	0	18	61	22
Physical sciences	835	17	11	70	2	564	10	10	79	2
Chemistry	280	8	4	88	0	196	1	1	98	1
Geology	182	51	28	20	1	108	40	35	25	0
Physics	373	7	10	80	3	260	5	7	84	3
Biological sciences	1,003	12	10	71	6	730	9	8	77	6
Biology	277	17	14	66	3	193	10	11	76	4
Botany	47	15	15	66	4	37	6	14	75	6
Zoology	62	22	17	57	4	54	21	13	61	5
Biochemistry	255	7	9	72	12	187	5	7	79	9
Microbiology	179	9	7	75	8	140	11	3	76	9
Physiology	183	12	5	80	3	119	8	6	83	3
Mathematical and computer sciences	73	7	8	76	10	46	0	10	84	6
Mathematics	31	3	0	87	10	15	0	0	93	7
Computer science	42	10	14	69	9	31	0	14	80	6
Social sciences	41	29	22	45	4	33	22	19	54	5
Economics	7	**	**	**	**	4	**	**	**	**
Political science	11	36	18	46	0	8	**	**	**	**
Sociology	23	27	20	45	7	21	29	16	49	6
Psychology	82	35	10	50	5	61	30	10	57	3

*Nonfaculty who have held doctorates seven years or less.

**Percentage was not calculated when number of Federally funded investigators was less than 10.

Source: National Science Foundation

Table B-57. Full-time nonfaculty research doctorates in surveyed departments engaged in federally funded research, by investigator status, doctoral status, and field: Spring 1980 -- con.

Field	Senior doctorates				
	Number engaged in Federal research	Investigator status (percent)			
		Principal investigators	Co-principal investigators	Other	Independent
All fields	693	28	16	52	4
Engineering	85	37	20	43	0
Chemical	12	55	8	38	0
Civil	12	28	9	64	0
Electrical	30	40	10	50	0
Mechanical	31	32	38	30	0
Physical sciences	271	31	15	53	1
Chemistry	84	26	11	63	0
Geology	74	67	18	14	1
Physics	113	11	16	71	19
Biological sciences	273	22	16	55	7
Biology	84	35	22	43	1
Botany	10	50	20	30	0
Zoology	8	**	**	**	**
Biochemistry	68	14	14	52	20
Microbiology	39	0	24	73	3
Physiology	64	21	4	72	3
Mathematical and computer sciences	27	18	5	64	13
Mathematics	16	6	0	82	12
Computer science	11	35	11	38	15
Social sciences	8	**	**	**	**
Economics	3	**	**	**	**
Political science	3	**	**	**	**
Sociology	2	**	**	**	**
Psychology	23	48	9	33	10

*Nonfaculty who have held doctorates seven years or less.

**Percentage was not calculated when number of Federally funded investigators was less than 10.

Source: National Science Foundation

Table B-58. Opinions of surveyed department chairpersons on the appropriate division of research funds between full-time recent* and senior faculty by field: Spring 1980

Field	All chair-persons (number)	Opinions on division (percent)			No response (percent)
		Division is appro-priate	Division is not appropriate. More funds should go to:		
			Recent doctorates	Senior doctorates	
All fields	1,866	63	16	11	10
Engineering	379	63	15	15	7
Chemical	88	65	18	13	4
Civil	94	61	15	15	8
Electrical	100	67	11	12	9
Mechanical	97	58	16	20	7
Physical sciences	369	63	15	9	12
Chemistry	137	66	15	10	9
Geology	94	65	14	11	10
Physics	138	60	17	7	16
Biological sciences	499	67	11	10	11
Biology	90	65	13	16	6
Botany	50	56	24	12	8
Zoology	44	59	17	14	11
Biochemistry	113	72	4	9	15
Microbiology	103	65	12	8	14
Physiology	99	76	9	6	9
Mathematical and computer sciences	188	56	27	6	11
Mathematics	124	60	23	4	12
Computer science	64	50	33	11	6
Social sciences	303	59	19	10	12
Economics	107	51	23	10	16
Political science	96	61	20	6	13
Sociology	100	65	14	13	7
Psychology	128	62	15	17	5

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-59. Opinions of surveyed department chairpersons on the likelihood of full-time recent* doctorate faculty submitting research proposals, compared to five years ago, by field: Spring 1980

Field	All chair-persons (number)	Opinions on likelihood (percent)							No response (percent)
		Very much less likely	Much less	A little less	About as likely	A little more	Much more	Very much more likely	
All fields	1,866	1	2	5	35	20	18	7	10
Engineering	379	1	1	5	37	18	24	5	10
Chemical	88	0	1	2	44	13	23	5	5
Civil	94	0	0	3	36	20	29	1	11
Electrical	100	1	0	9	36	16	16	8	15
Mechanical	97	3	1	5	31	22	27	4	8
Physical sciences	369	1	1	3	32	21	20	8	14
Chemistry	137	0	1	1	36	26	16	10	10
Geology	94	1	1	3	27	21	29	11	7
Physics	138	1	2	4	32	15	18	5	22
Biological sciences	499	0	1	2	43	17	17	9	11
Biology	90	0	2	0	38	21	18	16	7
Botany	50	0	4	8	40	16	30	4	0
Zoology	44	0	0	5	18	25	39	9	7
Biochemistry	113	0	0	0	49	15	7	13	15
Microbiology	103	0	3	1	47	11	15	5	19
Physiology	99	0	0	4	49	18	16	3	8
Mathematical and computer sciences	188	1	4	10	27	23	20	8	9
Mathematics	124	1	5	10	29	22	19	6	8
Computer science	64	0	2	9	23	25	20	12	9
Social sciences	303	1	4	10	30	23	17	7	7
Economics	107	3	4	9	31	24	21	4	6
Political science	96	0	5	9	33	17	17	7	10
Sociology	100	1	3	10	27	29	15	10	5
Psychology	128	0	6	7	32	24	23	2	1

*Faculty who have held doctorates seven years or less.

Source: National Science Foundation

Table B-60. Trends in distribution of full-time recent,* senior, and nondoctorate faculty in surveyed departments by field and year

Field and faculty group	1968** (percent)	1974 (percent)	1980 (percent)
All fields***			
Recent	39	28	21
Senior	54	68	76
Nondoctorate	7	4	3
Chemical engineering			
Recent	36	21	23
Senior	55	74	73
Nondoctorate	8	5	4
Electrical engineering			
Recent	42	26	17
Senior	38	58	75
Nondoctorate	20	11	8
Chemistry			
Recent	34	21	16
Senior	63	77	82
Nondoctorate	3	2	2
Geology****			
Recent	-	25	19
Senior	-	73	79
Nondoctorate	-	3	2
Physics			
Recent	38	18	11
Senior	58	80	88
Nondoctorate	3	2	1
Biology			
Recent	34	25	20
Senior	61	73	78
Nondoctorate	5	3	2
Botany****			
Recent	-	24	20
Senior	-	71	74
Nondoctorate	-	5	6
Zoology****			
Recent	-	28	23
Senior	-	68	70
Nondoctorate	-	3	7

Field and faculty group	1968** (percent)	1974 (percent)	1980 (percent)
Biochemistry			
Recent	30	21	14
Senior	66	78	85
Nondoctorate	4	1	1
Microbiology			
Recent	30	27	18
Senior	66	70	79
Nondoctorate	5	3	3
Physiology			
Recent	31	29	23
Senior	59	68	76
Nondoctorate	10	2	2
Mathematics			
Recent	47	35	22
Senior	44	59	73
Nondoctorate	10	6	6
Economics			
Recent	38	35	30
Senior	51	58	63
Nondoctorate	10	7	7
Sociology			
Recent	42	42	31
Senior	48	51	65
Nondoctorate	11	7	4
Psychology			
Recent	43	38	27
Senior	55	61	72
Nondoctorate	2	1	1

*Faculty who have held doctorates seven years or less.

**Percentages for 1968 are based on unweighted data.

***Summations for all fields include only the 12 fields covered in 1968.

****Not included in 1968 survey.

Source: National Science Foundation

Table B-61. Trends in distribution of full-time recent,* senior, and nondoctorate faculty in surveyed departments, by control of institution, field, and year

Field and faculty group	Public (percent)		Private (percent)	
	1974	1980	1974	1980
All fields** ***				
Recent	28	20	28	23
Senior	67	76	69	74
Nondoctorate	4	4	3	3
Chemical engineering				
Recent	21	22	22	23
Senior	74	73	75	73
Nondoctorate	6	5	2	4
Electrical engineering				
Recent	27	17	24	19
Senior	62	75	66	74
Nondoctorate	12	8	10	7
Chemistry				
Recent	20	15	23	19
Senior	78	83	77	81
Nondoctorate	2	2	0	0
Geology				
Recent	24	18	26	21
Senior	73	80	73	77
Nondoctorate	3	2	1	2
Physics				
Recent	17	9	21	17
Senior	81	90	77	82
Nondoctorate	2	1	2	1
Biology				
Recent	25	18	25	22
Senior	72	79	74	76
Nondoctorate	3	3	1	1
Botany				
Recent	24	20	-	-
Senior	71	73	-	-
Nondoctorate	5	6	-	-
Zoology				
Recent	29	24	-	-
Senior	68	70	-	-
Nondoctorate	4	7	-	-
Biochemistry				
Recent	22	13	20	17
Senior	77	85	79	83
Nondoctorate	2	2	1	0
Microbiology				
Recent	28	18	24	17
Senior	69	79	73	80
Nondoctorate	3	3	2	3
Physiology				
Recent	31	23	27	21
Senior	67	75	70	78
Nondoctorate	2	2	3	1
Mathematics				
Recent	35	21	35	24
Senior	59	73	60	71
Nondoctorate	7	6	5	4
Economics				
Recent	36	29	33	34
Senior	58	65	59	60
Nondoctorate	7	7	8	6
Sociology				
Recent	43	31	43	30
Senior	51	65	51	66
Nondoctorate	7	4	7	4
Psychology				
Recent	37	26	41	31
Senior	62	73	58	69
Nondoctorate	1	1	1	1

*Faculty who have held doctorates seven years or less.

**Percentages for all fields (private institutions) include botany and zoology, which are not reported separately because of the small numbers of departments in private institutions.

***Summations for all fields include only the 15 fields covered in 1974.

Source: National Science Foundation

Table B-62. Trends in proportions of full-time faculty in surveyed departments who have tenure, by field and year

Field	1974 (percent)	1980 (percent)
All fields*	70	74
Chemical engineering	81	73
Electrical engineering	77	77
Chemistry	77	79
Geology	75	78
Physics	78	83
Biology	69	73
Botany	76	80
Zoology	71	72
Biochemistry	64	73
Microbiology	65	66
Physiology	59	63
Mathematics	67	75
Economics	67	67
Sociology	60	69
Psychology	63	73

*Summations for all fields include only the 15 fields covered in 1974.

Source: National Science Foundation

Table B-63. Trends in proportions of full-time recent,* senior, and nondoctorate faculty in surveyed departments who have tenure, by field and year

Field and faculty group	1974 (percent)	1980 (percent)
All fields**		
Recent	19	14
Senior	92	92
Nondoctorate	54	44
Chemical engineering		
Recent	32	16
Senior	95	92
Nondoctorate	66	61
Electrical engineering		
Recent	31	11
Senior	95	92
Nondoctorate	84	73
Chemistry		
Recent	16	9
Senior	94	94
Nondoctorate	69	40
Geology		
Recent	18	12
Senior	96	94
Nondoctorate	48	65
Physics		
Recent	16	9
Senior	92	93
Nondoctorate	76	66
Biology		
Recent	13	7
Senior	90	90
Nondoctorate	32	54
Botany		
Recent	25	31
Senior	97	96
Nondoctorate	33	45
Zoology		
Recent	20	18
Senior	95	94
Nondoctorate	14	34
Biochemistry		
Recent	7	9
Senior	79	85
Nondoctorate	35	43
Microbiology		
Recent	17	9
Senior	85	80
Nondoctorate	37	23
Physiology		
Recent	13	12
Senior	80	79
Nondoctorate	30	50
Mathematics		
Recent	19	12
Senior	95	96
Nondoctorate	69	49
Economics		
Recent	24	18
Senior	97	95
Nondoctorate	33	13
Sociology		
Recent	25	17
Senior	94	96
Nondoctorate	21	32
Psychology		
Recent	15	15
Senior	94	96
Nondoctorate	26	22

Continued in the next column

*Faculty who have held doctorates seven years or less.

**Summations for all fields include only the 15 fields covered in 1974.

Source: National Science Foundation

Table B-64. Trends in proportions of full-time recent,* senior and nondoctorate faculty in surveyed departments who have tenure, by control of institution, field, and year

Field and faculty group	Public (percent)		Private (percent)	
	1974	1980	1974	1980
All fields** ***				
Recent	23	16	10	8
Senior	94	93	88	90
Nondoctorate	55	41	54	42
Chemical engineering				
Recent	39	14	17	21
Senior	96	94	93	87
Nondoctorate	62	69	86	36
Electrical engineering				
Recent	37	13	14	5
Senior	96	93	93	92
Nondoctorate	85	75	82	67
Chemistry				
Recent	20	11	7	4
Senior	94	94	94	94
Nondoctorate	68	38	75	67
Geology				
Recent	21	15	9	4
Senior	97	94	92	94
Nondoctorate	48	64	67	67
Physics				
Recent	22	13	8	3
Senior	93	93	89	92
Nondoctorate	81	65	58	67
Biology				
Recent	17	7	6	6
Senior	93	92	84	86
Nondoctorate	32	60	31	27
Botany				
Recent	25	30	-	-
Senior	98	96	-	-
Nondoctorate	35	46	-	-
Zoology				
Recent	21	18	-	-
Senior	95	94	-	-
Nondoctorate	16	34	-	-
Biochemistry				
Recent	9	14	4	0
Senior	89	87	64	80
Nondoctorate	33	44	50	0
Microbiology				
Recent	19	11	14	1
Senior	88	85	76	68
Nondoctorate	39	29	30	8
Physiology				
Recent	14	15	12	4
Senior	87	81	70	73
Nondoctorate	17	50	47	50
Mathematics				
Recent	22	15	10	5
Senior	95	97	72	96
Nondoctorate	67	45	77	63
Economics				
Recent	30	23	8	11
Senior	98	96	95	94
Nondoctorate	36	15	28	10
Sociology				
Recent	27	20	20	12
Senior	93	96	96	95
Nondoctorate	21	31	24	37
Psychology				
Recent	17	15	10	15
Senior	93	96	94	95
Nondoctorate	26	23	25	14

*Faculty who have held doctorates seven years or less.

**Percentages for all fields (private institutions) include botany and zoology, which are not reported separately because of the small numbers of departments in private institutions.

***Summations for all fields include only the 15 fields covered in 1974.

Source: National Science Foundation

Table B-65. Trends in proportions of department heads indicating that the division of research funds between recent* and senior doctorates is appropriate, by field and year

Field	Percent of department heads		
	1968**	1974	1980
All fields***	68	67	64
Chemical engineering	75	64	65
Electrical engineering	63	62	67
Chemistry	55	71	66
Geology****	-	66	65
Physics	67	71	60
Biology	79	62	65
Botany****	-	62	56
Zoology****	-	76	59
Biochemistry	69	74	72
Microbiology	73	67	65
Physiology	75	65	76
Mathematics	70	61	60
Economics	73	70	51
Sociology	61	66	65
Psychology	84	71	62

*Faculty who have held doctorates 7 years or less.

**Percentages for 1968 are based on unweighted data.

***Summations for all fields include only the 12 fields covered in 1968.

****Not included in 1968 survey.

Source: National Science Foundation

appendix c

reproduction of survey instruments

Page
NSF Letter to Department Heads 118
NSF Letter to Institution Coordinators 119
NSF Form E-0004-1 123

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

OFFICE OF THE
DIRECTOR

Dear Colleague:

Your assistance is needed in the National Science Foundation's survey of research activities in doctorate-level departments of science and engineering. Information supplied by you and other department heads will assist the Foundation in analyzing current critical issues concerning academic science. For example, the survey results will provide information about the representation of younger doctorates on department faculties and the extent of their research participation.

The Foundation conducted similar surveys in 1968 and 1974. Since then major changes have taken place in academic institutions and in Federal and non-Federal support of academic science. Some of these changes may affect the vigor of scientific research at universities. Therefore, it is important that information on academic research activities and investigators be kept current.

The Foundation has contracted with Westat, Inc. to conduct a survey of research activities in selected institutions which grant Ph.D.'s in the sciences. This questionnaire has been sent to heads of departments in your and selected other science and engineering fields. It is important that your answers be included along with others in your field so that the survey results will be representative. Your help in assisting us in this effort will be appreciated. The survey results will be published as summary statistics in a form that does not identify the responses of individual departments and institutions. We will send a copy of the published survey findings to each respondent.

We trust that you share our interest in these matters. Thank you for your assistance.

Sincerely,

Richard Atkinson

Richard C. Atkinson
Director

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

Dear Colleague:

The National Science Foundation is conducting a survey, through a contract with Westat, a Rockville, Maryland, research firm, as part of a periodic review of the status of science activities in colleges and universities. Questionnaires requesting information regarding faculty participation in research activities are being sent to selected doctorate-granting institutions. Your assistance in helping us obtain this information is important to the success of the study.

Information gathered in this survey will be used only for developing statistical summaries. Individual departments will not be identified in published summaries of the data.

Please give each department head (see list of departments on next page) a set of materials consisting of the following items:

1. The questionnaire, Study of Research Participation and Other Characteristics of Recent Science and Engineering Faculty, and the instructions for its use.
2. A letter from Dr. Richard C. Atkinson, Director of the National Science Foundation, explaining the reasons for the survey.
3. One copy of an optional Worksheet for Faculty Survey, which the department head may use, if he or she chooses, to assist in collecting data from department members. (These worksheets are not to be returned.)

Please collect one completed questionnaire for each designated department, package them together, and return to Westat in the postage-paid envelope by May 15, 1980. If there is a delay in gathering questionnaires from a few departments, send all that are available by that date, and send others submitted as soon as possible thereafter. If you have any questions, please place a collect call to Vivian Troutman, (301) 881-5310.

In addition to the Ph.D.-granting departments in the graduate school of this institution, there are some departments in the medical school that grant Ph.D. or D.Sc. degrees. These departments also are to be included, although the survey does not cover M.D., D.D.S., or D.V.M. degrees. A package of questionnaires and instructions for the medical school has been enclosed, along with the materials for the graduate school.

Your assistance in coordinating questionnaire administration both for the graduate school and for the medical school would be greatly appreciated. However, if it is not feasible for you to coordinate the collection of medical school data, we need to know who in your institution will be able to do so. In this event, you may provide us with the name of the appropriate person by calling Vivian Troutman collect, as soon as possible.

In your graduate school materials package, you will find two postcards, one to list graduate school departments and one to list medical school departments (the lists are the same to ensure consistency in data collection). If you are able to coordinate questionnaire administration for both schools, please fill out both postcards. If you are unable to coordinate medical school data collection, complete only the postcard marked "Graduate School." A copy of the "Medical School" postcard is enclosed in the package of medical school materials and should be filled out and returned by that coordinator. Please complete and return the postcard(s) immediately.

In the event that it is necessary to designate a separate coordinator for medical school data collection, we would appreciate your cooperation in sending the package of medical school materials to the appropriate person.

Questionnaires should be completed for each doctorate-granting department in your institution's graduate and medical schools for the following fields:

Engineering

Electrical engineering

Chemical engineering

Civil engineering

Mechanical engineering

Physical sciences

Chemistry

Geology - Include only departments designated as geology or geological science.

Physics - Include only departments designated as physics or physics and astronomy. Do not include highly specialized departments, such as molecular physics or electrophysics.

Mathematical sciences

Mathematics - Do not include departments limited to applied mathematics or statistics.

Computer sciences - Include only departments of computer science and information sciences that are not components of schools or colleges of business.

Behavioral and social sciences

Economics - Do not include departments of agricultural economics (n.b.: Economics can be part of colleges of business).

Political science - Include only departments of political science and government. Do not include departments of area studies, public administration, international relations, and public affairs.

Psychology - Do not include highly specialized departments or fields of education, such as departments of child development, child studies, educational psychology, or counseling.

Sociology - Include departments designated as sociology or sociology and anthropology.

Biological sciences

Biochemistry - Include departments of biochemistry or biological chemistry.

Biology - Include only departments designated as biology or biological science. Do not include departments covering only specialized fields, such as cellular biology or molecular biology.

Botany - Include departments of botany or botany and other subjects (e.g., botany and plant pathology).

Microbiology - Include only departments designated as microbiology or bacteriology.

Physiology - Include departments of physiology or physiology and other subjects (e.g., physiology and biophysics).

Zoology - Include departments of zoology or zoology and other subjects (e.g., zoology and entomology).

Thank you for your cooperation in this extremely important study of science research activities in your institution.

Sincerely yours,

Charles E. Falk

Charles E. Falk
Director, Division of
Science Resources Studies

Form Approved
FEDAC No. S153
App. Exp.: 02/01/81

STUDY OF RESEARCH PARTICIPATION AND OTHER CHARACTERISTICS OF RECENT SCIENCE AND ENGINEERING FACULTY

SPRING 1980

Sponsored by NSF, Directorate for Scientific, Technological, and International Affairs, Division of Science Resources Studies, under the authorization of Sec. 3(a)(6), National Science Foundation Act of 1950 as amended.

Please complete the following information:

University ______________________________

School or college ______________________________

Department ______________________________

Person completing survey form:

Name ______________________________

Title ______________________________

Date ______________________________

Telephone ______________________________
Area Code Number

INFORMATION GATHERED IN THIS SURVEY WILL BE USED ONLY FOR DEVELOPING STATISTICAL SUMMARIES. INDIVIDUAL PERSONS AND DEPARTMENTS WILL NOT BE IDENTIFIED IN PUBLISHED SUMMARIES OF THE DATA. YOUR PARTICIPATION IN THIS SURVEY IS VOLUNTARY.

NSF Form E-0004-1
3/80

DEFINITIONS

The following definitions apply in responding to this questionnaire.

Full-Time Faculty. Persons with a full-time appointment. Include all ranks of regularly appointed faculty, from instructor to professor. Please DO NOT include the following as full-time faculty: visiting professors, postdoctorates, research associates, graduate assistants, or others who are not regular full-time faculty in this department. Persons with joint appointments who work part of their time in another department should be treated as follows: those working more than half their time in this department should be included here; those working less than half time in this department should be included in the other department; if they work exactly half time in each, please consult with the chairperson of the other department as to which will include the appointee. DO NOT forget to include yourself. Also include full-time members of your department who are on sabbatical leave away from your institution.

Full-Time Non-Faculty Research Doctorate. Persons employed full-time by the department in a professional capacity specifically for research activities, who hold a doctorate on the date this survey form is filled out, who do not have a faculty appointment, and who are not postdoctorates.

Postdoctorates. Persons with doctorates who hold temporary appointments, the primary purpose of which is to provide for continued education or experience in research usually, though not necessarily, under the supervision of a senior mentor. Does not include appointments for residency training in the health professions.

Time since doctorate. Data are requested separately for persons who have been awarded doctorates. There are two categories:

7 years or less. Those who received their doctorates in the spring of 1973 or later.

Over 7 years. Those receiving their doctorates earlier than the spring of 1973.

Participation in research. Time spent in any and all research activities, including preparation of research reports, publications, and applications for funding, as well as other aspects of research in this discipline. Also include supervision of research by graduate students.

QUESTIONS 1 - 6 REQUEST BACKGROUND INFORMATION ABOUT THIS DEPARTMENT

1. **What academic ranks are held by the full-time faculty of this department?** *Please enter in the table below the numbers of full-time faculty members in each of the categories shown. Only persons holding full-time appointments are to be included. (See definition for Full-Time Faculty and time since doctorate.)*

Academic rank	Number of full-time faculty		
	Doctorates		Non-doctorates
	7 years or less	Over 7 years	
Professor			
Associate professor			
Assistant professor			
Instructor			
Other			
Total (sum of above)			

2. **How many full-time faculty members in this department held tenured positions and how many are non-tenured?** *Please enter the number of persons for each category shown. Only those holding full-time appointments are to be included.*

Tenure status	Number of full-time faculty		
	Doctorates		Non-doctorates
	7 years or less	Over 7 years	
a. Tenured			
b. Non-tenured			
c. Total (sum of a+b)*			
d. Of the non-tenured in (b) above, how many are on tenure track?			

*Totals for this line should be the same as for Table 1.

3. Of the full-time doctoral faculty in this department, what in your opinion should be the optimal percentage of those holding the doctorate for 7 years or less?

Please enter your preferred percentage . . . . . ________ %

Check here if you have no opinion . . . . ☐

4. How many full-time, non-faculty research doctorates are employed in this department? *Please enter the numbers of people for each category shown. Only persons holding full-time appointments are to be included. (See definition of Full-Time Non-Faculty Research Doctorate.)*

	Number of full-time non-faculty research doctorates	
	7 years or less	Over 7 years
Number employed		

5. How many full-time faculty did your department appoint for service to begin during the current academic year? What was the status of these appointees immediately prior to their joining your department? What tenure status were they given in your department at the time of their appointment?

Status prior to joining your department	Total full-time faculty appointed	Status of appointees as of date of appointment	
		Tenured	Non-tenured
Full-time graduate student			
Post-doctorate			
Full-time faculty or staff in another academic institution			
Full-time employee in industry			
Other or unknown			
Total			

185

6. How many members of this department who held full-time faculty appointments in September 1978 left the department during the 12 month period ending August 31, 1979, for one of the reasons listed below? *Please enter the numbers for each of the following categories. (Count each person only once; in case of multiple reasons, choose the one in your opinion that is most important.)*

Reasons for leaving	Number of full-time faculty leaving	
	Tenured	Non-tenured
Retirement		
Illness or death		
Voluntary resignation for another academic position		
Voluntary resignation for a non-academic position		
Voluntary resignation for other reasons		
Failure to receive tenure		
Involuntary resignation for other reasons		
Total (sum of above)		

QUESTIONS 7 - 14 REQUEST INFORMATION ABOUT THIS DEPARTMENT'S PARTICIPATION IN RESEARCH ACTIVITIES

7. Taking into account the total time devoted by faculty in this department to professional activities over a full year, what percent of the time is spent in research? *Please enter the numbers of full-time faculty in the department according to the percentage of time they spent on research activities during the 12-month period ending with the current quarter or semester, for each of the categories below. (See definition for participation in research.)*

Percentage of time spent in research	Number of full-time faculty		
	Doctorates		Non-doctorates
	7 years or less	Over 7 years	
a. Less than 20 percent			
b. At least 20 percent but less than one-half			
c. One-half or more			
d. Total all faculty (lines a + b + c)*			
e. Total faculty spending 20 percent or more time in research (line d minus line a)			

*Totals for this line should be the same as for Table 1.

8. How many of the full-time faculty of this department who have spent 20 percent or more of their time in research during the 12-month period ending with the current quarter or semester have also participated in the following activities during this same period? *Please enter the numbers of people for each of the categories shown. (Do not include those who served only as consultants.)*

Research activity	Number of full-time faculty spending 20 percent or more time on research		
	Doctorates		Non-doctorates
	7 years or less	Over 7 years	
Research project in industrial laboratory			
Research project in Federal government laboratory			

9. How many members of this department are or were engaged in project grants and contracts funded by Federal agencies during the 12-month period ending with the current quarter or semester? *Please indicate below their officially listed status as Principal Investigator, Co-Principal Investigator, or participant at another level. (Count each department member only once. For persons with more than one kind of status: if a Principal Investigator in any project, count only as a Principal Investigator; if a Co-Principal Investigator, but not a Principal Investigator in any project, count only as a Co-Principal Investigator; if neither a Principal Investigator nor Co-Principal Investigator in any project, count as other; if an "Independent Investigator" (see note below) but not a principal investigator, count as an Independent.)*

NOTE: If several independent investigators are included in a single project, each pursuing an independent line of research but with one person designated as Principal Investigator for management purposes, count the Principal Investigator as such and the others as Independent.

Status of investigators	Number of full-time faculty			Number of full-time non-faculty research doctorates	
	Doctorates		Non-doctorates		
	7 years or less	Over 7 years		7 years or less	Over 7 years
Principal investigator					
Co-principal investigator					
Other than principal or co-principal investigator					
Independent					
Total (sum of above)					

10. In your opinion, is there an appropriate division of research funds between full-time faculty members holding a doctorate 7 years or less and those holding it for more than 7 years? *(Circle choice 1 or 2 below.)*

YES . . . . 1 (GO TO Q.12)

NO . . . . 2 (GO TO Q.11)

11. *(IF YOU ANSWERED NO TO QUESTION 10:)* Which group, in your opinion, should be receiving a higher percentage of research funds than it is now receiving? *(Circle choice 1 or 2 below.)*

Faculty holding doctorates 7 years or less 1

Faculty holding doctorates more than 7 years 2

12. **How many research proposals were submitted by members of this department to any source of support during the year July 1, 1978 to June 30, 1979?* What has been the disposition of these proposals up to the present time?** *Enter each proposal in the table below according to the characteristics of its principal investigator and its disposition. If a proposal was submitted to more than one source, count it only once: if funded, show in line b; if denied and not now funded, even though it may now be pending with another agency, count in line c.*

Proposal categories	Full-time faculty			Full-time non-faculty research doctorates	
	Doctorates		Non-doctorates	7 years or less	Over 7 years
	7 years or less	Over 7 years			
a. Number of proposals submitted					
b. Number in (a) that were funded					
c. Number in (a) that were denied					
d. Number in (a) not yet acted upon					

*For this question, those holding doctorates for 7 years or less are those receiving the degree since Spring 1972.

13. Have faculty members holding their doctorates for 7 years or less been more or less likely to submit applications for independent research support during the 12-month period ending with the current quarter or semester than were faculty members with similar degree status five years ago? *Please circle the appropriate number on the line below.*

Very much less likely	Much less	A little less	About as likely	A little more	Much more	Very much more likely
1	2	3	4	5	6	7

14. Are there factors operating within this department or institution that affect the opportunities for professional staff other than tenured or tenure track faculty to seek Federal research support as principal investigators? Specific reference is made to those faculty members who possess doctorates but are not in a tenure track position, as well as non-faculty research doctorates. *Please review the statements below and check all that apply to this department. If none of these statements apply to this department, please check the box indicated at the end of the list. (Check all that apply.)*

☐ A. A formal (i.e., written) policy exists that limits the eligibility of non-tenure track doctorate faculty to serve as principal investigators.

This policy exists at the following level(s):

___ Departmental
___ Institutional

☐ Exceptions may be made to this formal policy on an individual basis.

☐ B. A formal (i.e., written) policy exists that limits the eligibility of non-faculty research doctorates to serve as principal investigators.

This policy exists at the following level(s):

___ Departmental
___ Institutional

☐ Exceptions may be made to this formal policy on an individual basis.

☐ C. There is no formal departmental or institutional policy on eligibility to serve as principal investigators.

☐ D. In practice, either non-tenure track doctorates or non-faculty research doctorates are discouraged from seeking support as principal investigators. The reasons for this practice are as follows. *(Check all that apply. 1-4)*

☐ 1) Non-tenure track faculty are typically hired to teach, and major involvement as a principal investigator would interfere with this primary duty.

☐ 2) Non-faculty research doctorates are typically hired to perform specific services, and major involvement as a principal investigator would interfere with this primary duty.

☐ 3) Laboratory space and/or equipment are limited, and therefore, either or both of the groups below have a lower priority for use of facilities. *If this statement has been checked, please indicate whether it applies to one or both of the following groups:*

___ Non-tenure track faculty doctorates
___ Non-faculty research doctorates

☐ 4) Proposals from either or both of the groups below have a low probability of being funded. *If this statement has been checked, please indicate whether it applies to one or both of the following groups:*

___ Non-tenure track faculty doctorates
___ Non-faculty research doctorates

☐ E. In practice, either or both of the groups below are encouraged or at least permitted to seek support as principal investigators. *If this statement has been checked, please indicate whether it applies to one or both of the following groups:*

___ Non-tenure track faculty doctorates
___ Non-faculty research doctorates

☐ F. Other *(please specify)* ______________________________
____

IF NONE OF THE ABOVE STATEMENTS EXCEPT 'C' APPLIES IN THIS DEPARTMENT, PLEASE CHECK THIS BOX: ☐

QUESTIONS 15 - 17 REQUEST DEMOGRAPHIC
INFORMATION ABOUT THE MEMBERS OF THE DEPARTMENT

15. **How many members of this department are in each of the following age groups?** *Please fill in the appropriate numbers for each category shown in the table below. Include only those holding full-time appointments.*

Age ranges	Number of full-time faculty		Number of full-time non-faculty research doctorates
	Doctorate	Non-doctorate	
Under 30			
30 - 39			
40 - 49			
50 - 54			
55 - 59			
60 - 64			
65 - 69			
70 and over			
Total (sum of above)*			

*Totals for this line should be the same as in Table 1.

16. How many members of this department are men and how many are women? *Please enter the numbers of persons for each category shown in the table below. Include only those holding full-time appointments.*

	Number of full-time faculty			Number of full-time non-faculty research doctorates	
	Doctorates		Non-doctorates	7 years or less	Over 7 years
	7 years or less	Over 7 years			
Men					
Women					
Total*					

*Totals for this line should be the same as in Table 1.

191

17. How many members of this department are members of each of the following racial/ethnic groups? *Please fill in the appropriate numbers for each category shown in the table below. Include only persons holding full-time appointments. (See definitions below.)*

Racial/ethnic group	Number of full-time faculty			Number of full-time non-faculty research doctorates	
	Doctorates		Non-doctorates	7 years or less	Over 7 years
	7 years or less	Over 7 years			
American Indian or Alaskan Native					
Asian or Pacific Islander					
Black, not of Hispanic origin					
Hispanic origin					
White, not of Hispanic origin					
Total (sum of above)*					

*Totals for this line should be the same as in Table 1.

Racial or ethnic group:

American Indian or Alaskan Native. A person having origins in any of the original peoples of North America, and who maintains cultural identification through tribal affiliation or community recognition.

Asian or Pacific Islander. A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent or the Pacific Islands. This area includes, for example, China, India, Japan, Korea, the Philippine Islands, and Samoa.

Black, not of Hispanic origin. A person having origins in any of the black racial groups of Africa.

Hispanic. A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

White, not of Hispanic origin. A person having origins in any of the original peoples of Europe, North Africa, or the Middle East.

18. If you have any comments about the situation of younger doctorates, conditions of research support, problems of non-tenured faculty, or any other aspect of this survey, please use the back of this page. You may also use this space to clarify any of your responses to questions.

other science resources publications

Science Resources Studies Highlights

	NSF No.	Price
R&D Funds		
"March Budget Revisions Raised Defense R&D Support in 1982—Cut All Other Areas"	81-321	-----
"National R&D Spending Expected to Approach $80 Billion in 1982"	81-314	-----
"Real Growth in Industrial R&D Performance Continues into 1979"	81-313	-----
"R&D Expenditures Increased 3% in Real Terms at Universities and Colleges in FY 1979"	81-304	-----
"Federal Academic Science Support Rose by 13% in FY 1979"	81-303	-----
S/E Personnel		
"Engineering Colleges Report 10% of Faculty Positions Vacant in Fall 1980/81"	81-322	-----
"Trends in Science and Engineering Degrees, 1950 Through 1980"	81-320	-----
"Proportion of Science and Engineering Faculty with Recent Doctorates Fell to One-Fifth of Total in 1980"	81-318	-----
"University S/E Faculty Spend One-Third of Professional Time in Research"	81-317	-----
"Academic Employment of Scientists and Engineers Increased 6% Between 1978 and 1980"	81-315	-----
"Tenure Practices in Universities and 4-Year Colleges Affect Faculty Turnover"	81-300	-----

Detailed Statistical Tables

R&D Funds	NSF No.	Price
Federal Funds for Research and Development, Fiscal Years 1980, 1981, and 1982, Volume XXX	81-318	-----
Research and Development in Industry, 1979. Funds, 1979; Scientists and Engineers, January 1980	81-324	In press
Academic Science: R&D Funds, Fiscal Year 1979	81-301	-----
Research and Development in State and Local Governments, Fiscal Year 1977	79-327	-----
S/E Personnel		
Federal Scientific and Technical Personnel, 1976, 1977, and 1978	81-309	-----
Academic Science: Scientists and Engineers, January 1980	81-307	-----
Scientists and Engineers From Abroad, 1976-78	80-324	-----
Characteristics of Doctoral Scientists and Engineers in the United States, 1979	80-323	-----
Academic Science: Graduate Enrollment and Support, Fall 1979	80-321	-----
Employment of Scientists, Engineers, and Technicians in Manufacturing Industries, 1977	80-306	-----
U.S. Scientists and Engineers, 1978	80-304	-----
Characteristics of Experienced Scientists and Engineers, 1978	79-322	-----

Reports

R&D Funds	NSF No.	Price
Federal Support to Universities, Colleges, and Selected Nonprofit Institutions, Fiscal Year 1979	81-308	$5.50
Federal Funds for Research and Development, Fiscal Years 1979, 1980, and 1981, Volume XXIX	81-306	$3.7
Problems of Small-High Technology Firms	81-305	In pre
S/E Personnel		
Women and Minorities in Science and Engineering	81-327	In pre
Activities of Science and Engineering Faculty in Universities and 4-Year Colleges, 1978/79	81-323	In pre
Foreign Participation in U.S. Science and Engineering Higher Education and Labor Markets	81-316	In pre
Science and Engineering Employment: 1970-90	81-310	$2.
The Stock of Science and Engineering Master's Degree-Holders in the United States	81-302	--
Employment Attributes of Recent Science and Engineering Graduates	80-325	$1.
Scientists, Engineers, and Technicians in Private Industry, 1978-80	80-320	$2.
Occupational Mobility of Scientists and Engineers	80-317	$1.
Employment Patterns of Academic Scientists and Engineers, 1973-78	80-314	$1.
Composite		
Academic Science, 1972-81: R&D Funds, Scientists and Engineers, and Graduate Enrollment and Support	81-326	In pre
National Patterns of Science and Technology Resources, 1981	81-311	$4.
Science and Engineering Personnel: A National Overview	80-316	$4.